VOYAGES

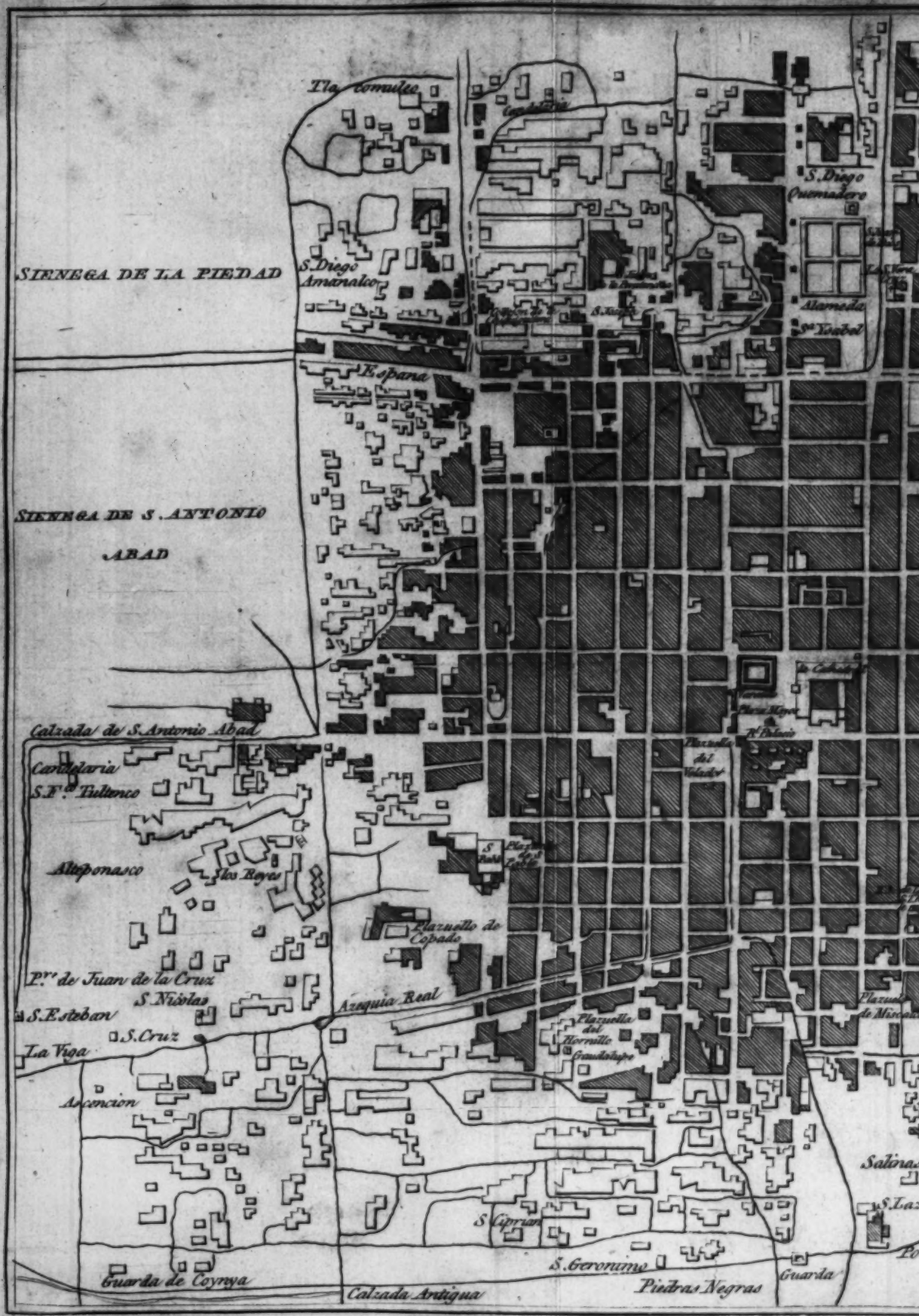
TO

CALIFORNIA,

NEWFOUNDLAND,

AND

SALLEE.



Tlacomulco
Candelaria
S. Diego Quemadero
SIENEGA DE LA PIEDAD
S. Diego Amanalco
Alameda
Sta Ysabel
Espana
SIENEGA DE S. ANTONIO ABAD
Calzada de S. Antonio Abad
Candelaria
S. Fco Tultenco
Alteponasco
los Reyes
Plazuelo de Copado
Pre de Juan de la Cruz
S. Nicolas
S. Esteban
S. Cruz
La Viga
Azequia Real
Plazuella del Hornillo
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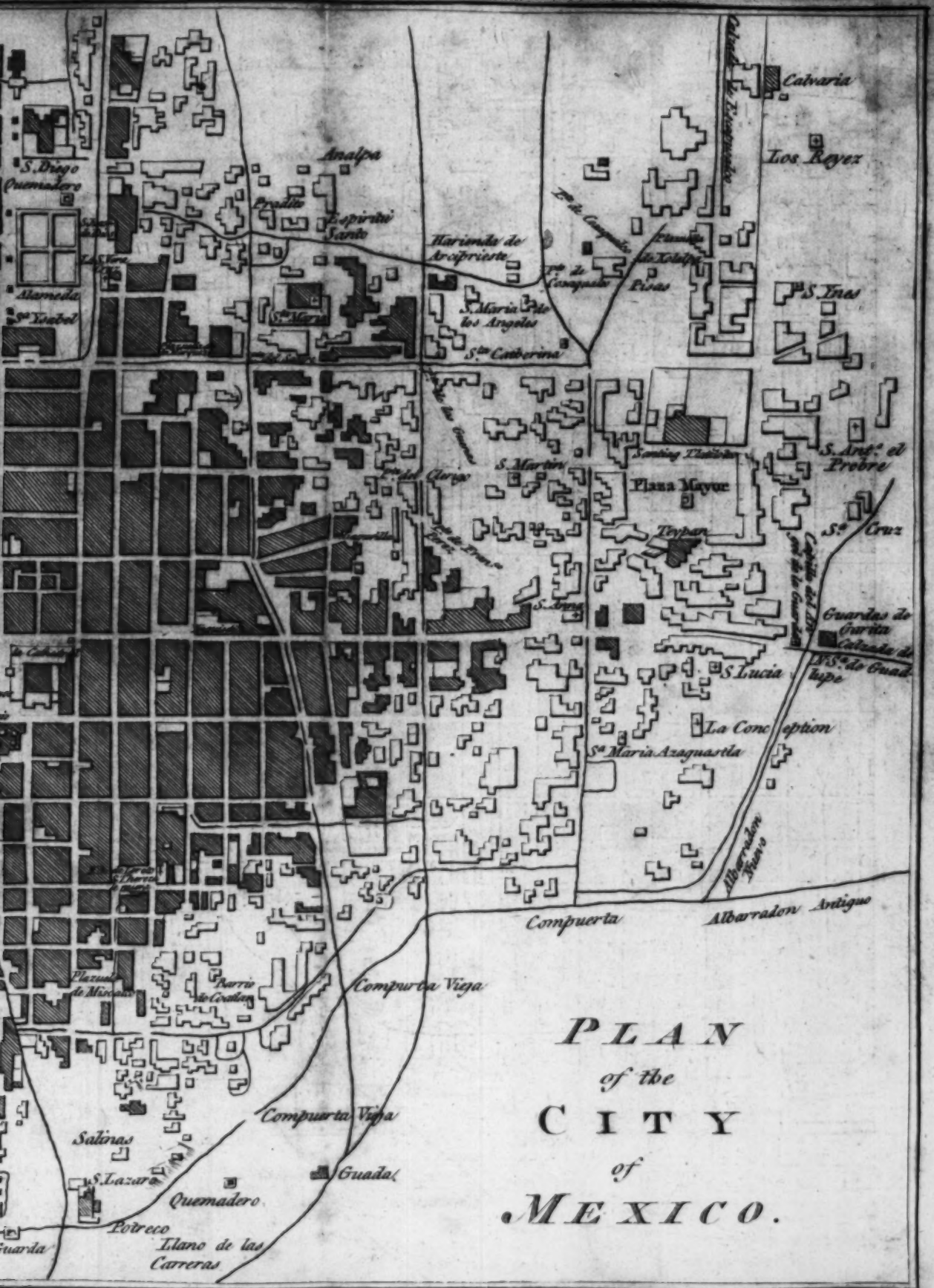
S. Cipriano
S. Geronimo
Guarda de Coynya
Calzada Antigua
Piedras Negras
Guarda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of
MEXICO.
Calvaria
Los Reyez
S. Diego
Quemadero
Analpa
Pradito
Espiritu Santo
Harienda de Arciprieste
Pisas
S. Ynes
Alameda
Sta Ysabel
S. Maria de los Angeles
Sta Catherina
S. Martin
Santiago Tlatilolco
S. Antº el Probre
Plaza Mayor
Teypan
Sta Cruz
S. Anna
Guardas de Garita
Calzada de N. Sª de Guadalupe
S. Lucia
La Conception
Sª Maria Azaguastla
Albarradon Nuevo
Compuerta
Albarradon Antiguo
Compurta Vieja
Plazuela de Miscalco
Barrio de Coatlan
Compuerta Vieja
Salinas
S. Lazaro
Guada
Quemadero
Potreco
Llano de las Carreras
Guarda

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A VOYAGE TO CALIFORNIA,

TO OBSERVE THE

TRANSIT OF VENUS.

BY

MONS. CHAPPE D'AUTEROCHE.

WITH AN

HISTORICAL DESCRIPTION

OF THE

AUTHOR'S ROUTE THROUGH MEXICO,

AND THE

NATURAL HISTORY OF THAT PROVINCE.

ALSO, A

VOYAGE TO NEWFOUNDLAND AND SALLEE,

TO MAKE EXPERIMENTS ON

MR. LE ROY'S TIME KEEPERS.

BY

MONSIEUR DE CASSINI.

LONDON:
PRINTED FOR EDWARD AND CHARLES DILLY,
IN THE POULTRY.
MDCCLXXVIII.

ADVERTISEMENT.

THESE Voyages were undertaken on important occaſions, and executed by Gentlemen eminent in their reſpective walks of Science, for the public utility. The performances were ſo well approved by the French nation, that they went through ſeveral editions, and the Tranſlator hopes that they will be received with equal pleaſure by every Engliſh reader.—Many of the remarks and obſervations contained in them, muſt be allowed to be very intereſting to the Public, and the whole contents entertaining and inſtructive.

ADVERTISEMENT.

THESE Voyages were undertaken on important occasions, and executed by Gentlemen eminent in their respective walks of Science, for the public benefit. The Journals were [illegible] by the French Monarch, that they will be received with equal pleasure by the Public in this country. [illegible]

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VOYAGE

VOYAGE
TO
MEXICO
AND
CALIFORNIA.

I Set out from Paris September 18, 1768, for Havre de Grace, where I was to embark.[1] I was attended by a ſervant, and

[1] Mr. Chappe's Journal begins but at his departure from Cadiz to Vera Cruz. All the facts I relate in the beginning of this account, previous to that period, are collected from his own letters, and from the accounts of his fellow travellers.

by three other perſons, who had engaged to go along with me to California, and to ſhare the labours and dangers of ſo long a voyage. Mr. Pauly, the King's Engineer and Geographer, from whoſe talents I expected great aſſiſtance, was to ſecond me in my aſtronomical and geographical operations: Mr. Noel, a pupil of the Academy of Painting, was intended for our draughtſman, to take draughts of ſea coaſts, plants, animals, and whatever we might meet with that was curious: laſtly, Mr. Dubois, a watchmaker, was intruſted with the care of preſerving my inſtruments, and repairing the little miſchiefs they too often ſuſtain in ſuch long voyages.

Whoever conſiders the prodigious extent of a paſſage of ſeveral thouſand leagues, ſuch as I was going to undertake; and reflects that one unlucky moment, the leaſt intervening cloud, might in one day defeat all our hopes, and render fruitleſs ſo

ſo much toil and expence, will not wonder at my taking theſe precautions, to draw other advantages from this voyage: that in caſe we ſhould be ſo unfortunate as to fail in our main purpoſe, we might in ſome meaſure make amends to the learned world for this loſs. Aſtronomy, geography, phyſic, and natural hiſtory, were the objects I propoſed. If the apparatus and materials requiſite for that purpoſe were both cumberſome and coſtly, I was fully repaid by the pleaſing hopes of improving my voyage to more purpoſes than one.

I arrived at Havre de Grace on the 21ſt of September, and found the ſhip *Le Nouveau Mercure*, commanded by Captain Le Clerc, ready to ſail for Cadiz. I embarked the 27th with my company and inſtruments, and we ſet ſail the next day. We had a very rough paſſage; a hard gale that we met with north of Cape Finiſterre, left the ſea very tempeſtuous for

near a week after. The winds were almoſt always contrary, ſo that we were one and twenty days going from Havre to Cadiz, which is commonly done in half the time.

We arrived at Cadiz October 17. The Spaniſh fleet which was to convey us to Vera Cruz, had already been in the road a whole month, and ſeemed ready to ſail. This gave me joy at firſt, little knowing how diſtant that departure was, which to me ſeemed ſo near; ſtill leſs did I foreſee the difficulties I was to encounter, joined with the tedioufneſs of a delay, which a thouſand times made me deſpair of getting in time to California.

The very moment I landed, I haſtened to wait on the governor of Cadiz, the intendant of the navy, and the Marquis de Tilly, general of the fleet. Theſe gentlemen received me with the greateſt civi-

lity.

lity. Mr. de Tilly having ſignified to me the orders of his court, by which he was enjoined to take me on board his fleet, with only a watchmaker and a draughtſman, I was in the utmoſt aſtoniſhment to find that no mention was made of Mr. Pauly, my ſecond. I repreſented to M. de Tilly that this omiſſion, falling juſt upon the very man I could leaſt ſpare, muſt be merely owing to a miſtake: he was very ſenſible it was ſo, and aſſured me that on his part I ſhould meet with no difficulty in the affair. But unfortunately, the embarking of the paſſengers was not wholly in his power; it principally concerned the Marquis de Real Theſoro, preſident of the *Contractation*, and to him we were to apply. Then it was that I met with freſh obſtacles.

In the orders of the court, communicated by the intendant to the preſident of the contractation, no mention was made

but of me. The latter conſequently, far from allowing Mr. Pauly to attend me, would make out no order but for myſelf alone, and only one inſtrument.

It is eaſy to conceive what I ſuffered from theſe unexpected diſappointments. At firſt ſight, they appeared to me ſuch as might eaſily be removed by only explaining the matter, but I was ſoon convinced nothing was to be expected that way. I therefore diſpatched a courier to the Marquis d'Oſſun, our ambaſſador at Madrid, to acquaint him of my ſituation, and deſire him to procure from the court of Spain ſuch preciſe orders, as ſhould leave no room for any more cavilling. The courier returned in about a week, and all was at length ſettled to my ſatisfaction. I therefore ſent my inſtruments on board the commodore, and impatiently waited for the moment when I could myſelf embark with all my attendants.

I had

I had already lingered a whole month at Cadiz, and the time of our departure was ſtill uncertain. When I calculated the time it would take to reach Vera Cruz, then to travel three hundred leagues by land to San-Blas, and afterwards to croſs the Vermeille ſea to California, I foreſaw it was morally impoſſible we ſhould get there in time for our obſervation, if we were retarded ever ſo little longer. I wrote to the Marquis d'Oſſun, requeſting, that in caſe the fleet did not ſail immediately, I might be permitted to embark on board the firſt ſhip, no matter which, provided we might be conveyed to Vera Cruz without loſs of time, and ſail as ſwift as poſſible.

The court of Spain, ſenſible of the neceſſity of taking ſuch a ſtep, readily acquieſced, as our requeſt could only be dictated by a zeal for the undertaking. Orders were iſſued, in caſe the fleet ſhould

be delayed, inſtantly to fit out a Bilander, or light veſſel to tranſport me to Vera Cruz, together with Meſſieurs Doz and Medina, two navy officers, and aſtronomers to his Catholic Majeſty, deſtined to obſerve the tranſit of Venus jointly with me, and at the ſame place.

This freſh order from court ſoon changed the face of affairs. At laſt I ſaw the wiſhed-for moment that had ſo long deluded my hopes. A veſſel with only twelve hands, was fitted out in a trice. I was ſtill more expeditious in removing my inſtruments that were on board the Commodore ſhip. The frailty of the veſſel I was going to venture in, and on which account ſome people endeavoured to intimidate me, was in my eyes but one merit the more. Judging of her ſwiftneſs by her lightneſs, I preferred her to the fineſt ſhip of the line. At length we ſet ſail, and at that inſtant I felt a tranſport

of

of joy, which was not to be equalled till I landed in California.

I ſhall not trouble the reader with the journal of our paſſage from Cadiz to Vera Cruz [2], as it offers nothing but what is common to all long voyages. Every kind of weather, calms, ſtorms, winds, ſometimes fair, ſometimes contrary; ſuch is in few words the hiſtory of moſt voyages; and as to ours, we may add, a continual toſſing of our little nut-ſhell, which was ſo very light as to be the ſport of the ſmalleſt wave.

I ſpent the whole time of our voyage in making phyſical and aſtronomical experiments and obſervations; ſuch as, comparing the height of the different

[2] Here begins Mr. Chappe's regular journal. I thought it beſt to ſuppreſs the particulars of a tedious navigation, as it muſt be tireſome to the reader, and contains nothing that is curious.

ther-

thermometers, ſome plunged into the ſea at different depths, others in open air; I aſcertained the declination and inclination of the magnetic needle in different latitudes; laſtly, I made ſeveral obſervations relative to the diſtance of the moon from the ſtars. I will not conceal the difficulties I met with when I endeavoured to make uſe of the *megameter* for theſe obſervations.[3] I tried ſeveral times to uſe this inſtrument, and never could ſucceed but once, when the ſhip was quite ſteady; that time, I got the moon full in the lens, which I never could when the ſea was in motion. Per-

[3] It is proper to take notice, that the following reflections on the ſeveral inſtruments for taking obſervations at ſea, and aſcertaining longitudes, are taken almoſt word for word from Mr. Chappe's own journal; I have never allowed myſelf to add any thing in matters which might be of ſome moment, eſpecially where the author has notions peculiar to himſelf.

haps

haps this was for want of practice; however, I was obliged to have recourſe to the octant, which I employed with much more eaſe and ſucceſs. I attempted in vain to obſerve Jupiter's ſatellites with the new teleſcope propoſed to the academy by Abbé Rochon. Indeed the field of this teleſcope was rather too ſmall; I ſaw Jupiter plain enough, but could not ſee the ſatellites.

All theſe trials ſuggeſted to me that it will be a hard matter to ſucceed in inventing inſtruments of eaſy uſe at ſea, if they reſt upon nothing more than the hand of the obſerver. One remark more I ſhall make on the determination of longitudes by diſtances of the moon from the ſtars. The tedious calculations which this method requires, with the accuracy and attention requiſite in the obſervation itſelf, make it doubtful to me whether it will ever be fit for the uſe of trading veſſels.

It

It muſt be confeſſed, it requires no ſmall degree of reſolution, even in perſons beſt acquainted with theſe ſtudies, to add to the fatigues of the ſea, thoſe of a nice obſervation, and of the tedious calculations conſequent upon it. This convinces me that the uſe of time-keepers, from its extreme eaſe, will be found to be of more general ſervice in the navy; it requires no inſtruments but what ſeamen are accuſtomed to; no nicety is wanted in the obſervation; laſtly, the calculation is ſhort and eaſy; a moſt important advantage this, in many caſes, and particularly at ſea.

Theſe ſeveral operations, to which I devoted the whole time of our paſſage, made it appear leſs tedious, and helped me to paſs away with ſome pleaſure the ſeventy-ſeven days it laſted. I muſt ſay that the ſea-faring life is tireſome and uniform to ſuch only as have not accuſtomed

cuſtomed themſelves to look about them, and who behold all nature with an eye of indifference; but to an attentive ſpectator, the ſea offers objects very capable of entertaining the mind, and exerciſing all the intellectual powers. Nature has beauties even in her horrors; nay, it is there perhaps that ſhe is moſt admirable and ſublime. The calmneſs of a fine day is in ſome meaſure leſs intereſting than thoſe moments of diſtreſs, when the waves, lifted up by the winds, ſeem confounded with the ſky. Deep gulphs are opening every moment. At this inſtant, man ſhudders at the ſight of a danger that appears inevitable; but anon, when he ſees the calm ſucceed the tempeſt, his admiration turns upon himſelf, upon the veſſel, upon the pilot, who are come off conquerors over the moſt formidable elements. A ſecret pride then riſes in his mind; he ſays within himſelf "If man, as an individual, is but a ſpeck, "an atom in this vaſt univerſe, he is, by "his

" his genius and his daring ſpirit, worthy " to embrace its whole extent, and to " penetrate into the wonders it contains."

Nothing indeed gives a higher notion of the compaſs of the human mind, than that art, now brought to ſuch perfection, of ſteering ſafely over the trackleſs ocean, and on a floating manſion, to traverſe immenſe ſpaces, in ſpite of two combined elements. Who that reflects on the numberleſs dangers of the ſea, but muſt cry out with Horace:

Illi robur & æs triplex
Circa pectus erat, qui fragilem truci
Commiſit pelago ratem.

This is what I repeated a thouſand times on our voyage, thinking on Chriſtopher Colomb, Gryalva, and all thoſe firſt intrepid mariners, who, in queſt of a new world, upon a mere ſurmiſe of its exiſtence, ſuggeſted by their own genius, dared

dared to undertake near three hundred years ago, thoſe very voyages which at this day we ſtill account dangerous, though aſſiſted with a thouſand helps that were wanting in the days of thoſe great men.

We arrived at Vera Cruz on the 6th of March, 1769, about two in the afternoon. We caſt anchor within a league and half of the coaſt, intending next morning to double the breakers that defend the entrance of the harbour, but could not reach them till the 8th, when we entered the canal. Then it was, that finding ourſelves ſurrounded on all ſides by threatening rocks, we made a ſignal for a pilot, and hoiſted French colours, but this was the ready way to get no aſſiſtance. Mr. Doz and Mr. Medina had wiſely adviſed our captain to hoiſt Spaniſh colours, but he would not, and from this we had well nigh periſhed.

It

It ſeems the entrance into the port of Vera Cruz being prohibited to all foreign ſhips, our ſignal had been anſwered by the firing of a gun, to compel us to anchor in the canal; this was devoting us to certain deſtruction. The canal leads to the harbour among rocks which ſtand ſo cloſe, that there is but juſt room for one ſhip to get through. The wind then blew from the north, and bearing full upon the rocks, made it exceedingly dangerous to anchor in ſuch a narrow paſs. Yet we were forced to comply, from an expreſs order ſent us by a ſloop.

So critical was our poſition, that of a hundred veſſels which anchor there, not two eſcaped, as we were told afterwards. There we remained, in the cruel expectation of ſeeing ourſelves every moment daſhed againſt the ſurrounding rocks, till the Governor of Vera Cruz being informed that our ſhip though a French bottom,

came

came thither by order of the court of Spain, ſent us leave to come in. This meſſage was as joyfully received as it had been impatiently expected. We weighed anchor, and at laſt entered the harbour of Vera Cruz, after a paſſage of ſeventy-ſeven days, having ſailed from Cadiz the 21ſt of December. It was high time our voyage ſhould be at an end, for our whole proviſion was reduced to one ſheep, five fowls, and water for a week at moſt. The hurry with which our veſſel was equipped at Cadiz, did not allow us to take all the neceſſary precautions for ſo long a voyage. Half our live proviſions died within the firſt fortnight, and great part of the others had been thrown overboard. In other reſpects, we had a tolerable paſſage, till theſe laſt moments; which indeed were cruel ones, as we ſaw ourſelves ready to periſh at the very mouth of the harbour, thanks to our flag that

ought to have protected us, conſidering the alliance between both nations.

Mr. Doz and Mr. Medina went aſhore firſt, to confer with the governor, who ſent me a boat two hours after. I ſtepped in with Mr. Pauly my ſecond. That north wind, which we had ſo long dreaded in the canal, increaſed hourly, and already blew ſo vehemently as to make our landing difficult; however, we got ſafe aſhore, but another boat that came after us, had four of her men blown overboard, who with much ado ſaved their lives by ſwimming aſhore.

I had no ſooner entered the town, but it blew a moſt furious hurricane. All intercourſe with our ſhip was then cut off. She had barely time to run for ſhelter behind the caſtle of St. Juan d'Ulua, the only place where a ſhip can be ſcreened from the north wind. For three

days

days that this ſtorm laſted, I was in the greateſt anxiety for my inſtruments, and for my people whom I had left behind, as it was impoſſible to land them, and I well knew their ſafety depended entirely upon the ſtrength of the cables with which they were moored. Had theſe cables broken or given way, they muſt inevitably have periſhed before our eyes, without a poſſibility of giving them the leaſt aſſiſtance. Every year affords but too many inſtances of the like diſaſters, which make the port of Vera Cruz very formidable. We were ſo lucky as not to add to the dreadful liſt. The calm returned, and I eagerly ſeized the firſt moments to land all my effects and my attendants; then it was that I felt the tranſporting pleaſure of being all once more together in a place of ſafety, and delivered from thoſe anxieties which are unavoidable upon ſo inconſtant an element as the ſea. The paſſage

that ſtill lay before us to California, was to be more fatiguing but leſs dangerous.

The governor of Vera Cruz was juſt dead, and the deputy Governor acted in his ſtead, till the Viceroy ſhould appoint another: he it was who received us, and he loaded us with civilities the whole time we ſtaid there. This was not long; only as much as was neceſſary to prepare for our next voyage. The place offers nothing that was worth ſtaying for.

La Vera Cruz is ſituated by the ſea ſide, in the ſouthern part of Mexico. It is ſurrounded on the north with barren ſands, and on the weſt with bogs that have been drained; this makes the ſituation both diſagreeable and unwholeſome. What I have already ſaid, ſufficiently ſhews how dangerous a harbour it is; the guſts of north wind, ſo frequent in the gulph of Mexico, are much to be dreaded here.

here. Nevertheleſs, this port is much frequented, eſpecially once in two years, when the Spaniſh fleet comes thither, to unload the European goods, which are afterwards to be ſold, and diſtributed all over Mexico, and to bring home that ſilver and thoſe immenſe treaſures, the thirſt of which, coſt the lives of ſo many thouſands, and made the wretched ſubjects of Montezuma the ſad victims of the inſatiable greedineſs of the Europeans.

La Vera Cruz contains no grand edifice. The Governor's houſe has nothing that diſtinguiſhes it from the reſt, which are all built after the Spaniſh manner. There is one church and three monaſteries. The ſtreets are tolerably ſtrait, and of a common breadth. The town is encompaſſed with walls, and has four gates, each flanked with two towers. There are two baſtions at the ends of the wall next the water ſide. Theſe fortifications are in a

ſad condition; the beſt defence is the fortreſs belonging to the caſtle of S. Juan d'Ulua. It is built on a rock which riſes in the middle of the harbour, facing the town at ſome diſtance. A deputy lodges and commands in this caſtle, and is independent of the governor of Vera Cruz, who commands in the town.

The day we landed, the governor's ſubſtitute wrote to the viceroy to inform him of our arrival: the latter ſoon ſent orders to facilitate our further voyage, and that we ſhould be furniſhed with as many men and mules as we wanted, to carry our baggage and inſtruments.

From Vera Cruz to St. Blas (where we were to embark, in order to croſs the Vermeille ſea) we had to travel about three hundred leagues, partly through deſart lands, and by the worſt roads imaginable. It is eaſily conceived, what trouble

trouble we had in preparing for ſuch a long and inconvenient journey. Firſt, we were obliged to unpack all our things and to make them up in ſmall loads, fit for mules to carry; conſequently, we wanted a great many beaſts; the more as we were under a neceſſity of carrying our beds and tents along with us, being to halt in places deſtitute of habitations. Next came the care of providing food: We were told we ſhould find few reſources that way along the road. The Indians feed upon poor bread, made of the meal of Indian corn; they grind it the beſt they can between two ſtones, and tempering the coarſe flour with a little water, they make it into cakes, which they bake upon a flat ſtone, clapping it on the middle of a great fire. Theſe loaves, which they call *tortillas*, are not much better than ſea-biſcuit, of which we had made a ſmall proviſion.

As to the other meſſes that the Indians feaſt upon, they put in ſo much pimento, and pour ſuch bad oil over them, that it is impoſſible, eſpecially for a Frenchman, to touch a bit. We therefore bought at Vera Cruz a great quantity of hams, and ſalt *pampano*. I muſt not omit ſpeaking of this fiſh.

The *pampano* is very plenty in the ſouthern part of the gulph of Mexico; it is caught from February to April; after that, there is no more to be found. This fiſh is commonly a foot and a half long, and about ſix inches wide; it has no ſcales; the ſkin, which is perfectly ſmooth, is of a ſlate colour, inclining to a pearly white, and grows yellowiſh towards the belly. The *pampano* has no teeth; the fleſh is exceedingly nice: the Spaniards extol it above all other ſea fiſh. Indeed we found it excellent good, freſh; but when ſalted it is very indifferent. We took

took ſome to eat upon the road, only for want of ſomething better; and could not even preſerve it long, the weather being very hot.

Two other kinds of fiſh abound in the rivers about Vera Cruz; the one is called *ſargo*, in Spaniſh, and appears to me to be the ſame as our turbot; the other is called *corobo*, which in Spaniſh ſignifies *hump backed*, and is expreſſive of its ſhape. As theſe fiſh are very common, it is needleſs to deſcribe them.

The quadrupeds found at Vera Cruz and in Mexico are the ſame as in Europe: but among the inſects, there is one that deſerves particular notice, and this is the *nigua*.

The *nigua* is black, ſomewhat like a flea, and as ſmall. It commonly faſtens to the feet or hands, and by degrees works itſelf

itſelf into the fleſh, which it gnaws, and at laſt cauſes violent itchings. It wraps itſelf up in a bag of the ſize of a pea, and there lays its eggs. If it is left too long in the wound, or if in picking it out you happen to burſt it, the part is found full of the animal's eggs, and you are forced to cut away all the fleſh that is infected with this vermin. But the worſt is, that the wound, they tell you, proves mortal if any water is ſuffered to touch it. And indeed, the firſt thing perſons do, after they have extracted the *nigua*, is to fill up the hole with tallow. This inſect is very common about Vera Cruz; the Indians have their feet ſadly mauled by them, and all diſtorted by the inciſions they are forced to make whenever they are ſtung. It appears that this inſect is likewiſe found in a province of Peru. Frezier[4], in his account of a voyage to the

[4] Account of a ſouth ſea voyage to the coaſts of Chili and Peru, p. 214.

ſouth

ſouth ſea, gives nearly the ſame particulars, but calls the inſect *pico*. I ſhould think this muſt be leſs venomous than the *nigua* of Vera Cruz, for he ſays nothing of the deadly effect of water.

We left Vera Cruz the 18th of March in the evening, and took the road to Mexico. We had hired two litters, one for Mr. Doz and Mr. Medina, the other for Mr. Pauly and myſelf; the reſt rode on mules, and went before, with the Indians who drove our baggage. We kept along the ſea ſhore for two hours, advancing to the north weſt, and then turned off to the inland country through immenſe woods. In three hours we came to a river, on the other ſide of which is a village called *Vieja Vera Cruz*. This is the ſpot where Vera Cruz formerly ſtood. The river that runs at the foot of this old Vera Cruz is about as broad as the Seine; you croſs it in a large ferry-boat,

boat, railed in on both ſides with beams about ten foot high. We ſaw nothing remarkable in this forſaken town, which is now but a very ſmall village, inhabited by none but Indians; but what made this place very comfortable for us, was, the good refreſhments we found there, and particularly wheaten bread, far better than what we had enjoyed at New Vera Cruz. We were told we ſhould meet with no more ſuch all the reſt of the way, ſo we laid in of it for four or five days. This was ſuch luck as travellers muſt make much of.

The following day we ſet out for *Xalapa*, the next town, and diſtant from Vieja Vera Cruz about two days journey. We found upon the road only a few little hamlets, conſiſting of two or three houſes each, ſometimes but one, and in theſe a traveller can hardly get water to quench his thirſt. From Vieja Vera Cruz to the hermitage

hermitage of *las Animas*, which is about fifteen leagues, not one ſpring or brook is to be met with, to quench that intolerable thirſt occaſioned by the vehement heat, and the duſt raiſed by the mules. Sometimes indeed, you meet with Indian women, ſtationed on the road, who ſell milk to travellers. They commonly keep at ſome diſtance from the road, and even hide behind a tree or buſh; ſo that you muſt be acquainted with their tricks, or you would be never the better for them. They will let travellers go by, eſpecially if they be foreigners, without ever offering them any of their milk; but our Indian guides gave us notice whenever they ſpied any of theſe women: we made up to them, and they conducted us to a little hut made of ſhrubs, where we found a cow, and there we quenched our thirſt at a very ſmall expence. We did not meet with this good luck ſo often as we wiſhed.

In

In the fine countries of Europe, where conveniencies of every kind abound upon the high roads, the traveller perceives a change of climate only by a change of enjoyments; but with us it was far otherwiſe. Exceſſive heat, frightful roads, and the ſlowneſs of our mules of burden, hardly ſuffered us to travel at the rate of ten leagues a day, which made our journey very tedious and tireſome. Nothing intereſting to make us amends. We traverſed on uncultivated lands or foreſts, and ſaw nothing but rude nature. I confeſs ſhe is not without her beauties; but in time the eye grows weary of them; uniformity grows inſipid, variety only has charms, and this the traveller ſeeks when he goes from country to country.

We arrived at Xalapa the 21ſt of March. This town, which ſtands cloſe to a mountain, is divided into two parts; the one is

at

at the foot, the other on the ſlope of the mountain. The houſes are of ſtone, and pretty well built, but there is no remarkable edifice. A conſiderable trade is carried on at Xalapa, which, every two years brings thither a great many Spaniards and Indians, who come towards the month of March. Then it is, that for the ſpace of ſix weeks, a famous fair is held, where all the merchandizes brought to Vera Cruz by the Spaniſh fleet, and from thence by land to Xalapa are ſold, and afterwards retailed all over Mexico. Theſe European commodities conſiſt of cloth, ſilks, muſlins, linen of all ſorts, but chiefly fine clear lawns from Britany, toys, ſteel, iron work, &c. The Mexicans give in exchange cochineal and money, for as to gold or ſilver bullion, no body is allowed to have any, and the exportation of it is ſtrictly prohibited. A breach of the regulations reſpecting the mines, is the greateſt crime that can be committed

committed in Mexico. A falſe coiner is hanged, a murderer is only impriſoned or baniſhed.

I had ſeveral letters of recommendation, which had been given me at Cadiz for ſome merchants ſettled at Xalapa, but as we came in very late, and were deſirous of ſetting out early the next morning, I put off delivering them till my return. The environs of Xalapa exhibited what we had ſeldom ſeen ſince we left Vera Cruz, cultivated grounds, trees of all ſorts, thick groves, all which beſpoke a fertile ſoil; and indeed very good Indian corn grows about Xalapa.

Juſt without the town we found a handſome cauſeway, walled in on both ſides, which led to the top of the mountain. It is a hard road, and would be a very pleaſant one if not ſo ſteep; indeed the mountain is extremely

extremely high. When we got to the top, we enjoyed a moſt ſingular proſpect; for we ſtood ſo high that the clouds were our horizon. At ſome diſtance from Xalapa, I begun to obſerve iron lying in blackiſh ſtrata along the road. Soon after, the ſoil ſhewed evident tokens of an extinguiſhed volcano. In ſome places, a light moſs hardly covered dry ſtones and lavas that lay acroſs the road; which ſeemed to me to indicate that this volcano, wherever it was, had not been long extinguiſhed, as theſe lavas were not yet covered with earth. Nature, in this place, bore the marks of the greateſt diſorder.

From Xalapa to *Las-Bigas*, the next hamlet, diſtant about ſix leagues, we did nothing but go up and down hill, croſſing a ridge of mountains that extends in breadth to both theſe places. The hamlet of *Las-Bigas*, like thoſe we had met with before we got to Xalapa, conſiſts

only of two or three houſes, but they are better built. From Vera Cruz, the Indian huts are made with reeds, placed perpendicularly, and even at ſome diſtance apart, ſo that they are but poorly ſheltered from the weather; beſides, all along the houſe, between the roof and the top of the wall that ſupports it, they leave a ſpace or opening for an outlet to the ſmoke, their fire being made in the middle of the room. But beyond Xalapa, as the ground is higher and higher, and conſequently the temperature of the air colder, the dwellings are much tighter and cloſer. The walls are of ſtone, and in many places of ſtone calcined in ſome volcano. Theſe calcined ſtones are very common in thoſe regions.

The inhabitants of Las-Bigas are mulattoes; the women go half naked, and ſhew a moſt frightful neck. The uſual dreſs of the Indian women conſiſts of two pieces

pieces of ſtuff, one that is fixed about their waiſt, and hangs half way down their legs in the ſhape of a petticoat; and the other, like a tablecloth, wraps over their ſhoulders, and covers them down to the waiſt. This kind of a cloak, which they call *pagnorobos*, they ſeldom wear but when they go abroad; at home they commonly pull it off, and ſo remain half naked. As to the men, they wear linen trouſers, much like thoſe of the ſailors, and over theſe another pair made with ſkin. Their body is covered with a waiſtcoat without ſleeves, or elſe they throw a woollen thing over their ſhoulders, like the women's pagnorobos. In ſome places far remote from any town, they go almoſt totally naked.

The Indians are of an olive complexion, have black eyes and hair, ſtout legs, and a flat noſe. The women are of the ſame colour, and no very pleaſing figures: they

commonly marry at nine or ten years old, and bear children till they are thirty-five or forty, but they ſeldom can rear a large family. The ſmall pox and meaſles carry off a great many children, eſpecially when the Indians, in order to cure them, put them into a ſweating bath, which almoſt inſtantly kills them.

The ill treatment theſe poor Indians receive from their maſters, contributes as much as ſickneſs to deſtroy the race; and the mines where they make them work, yearly prove fatal to an infinite number of theſe poor wretches. The immenſe labours they have gone through at Mexico in draining the lake, have likewiſe been the death of many thouſands; inſomuch that the province of Mexico is now but a vaſt deſert, compared to what it was in the time of Montezuma.

The

The Governor of Vera Cruz had written to the Viceroy of Mexico before we left the place, to inform him of the route we intended to take. The Viceroy, in conſequence of this information, had done us the favour to ſend us equipages from Mexico. We met them at *Perotte*, a hamlet, about forty leagues from the capital.

We were four days going from Perotte to Mexico. The road, which is pleaſant, and moſtly ſmooth, is carried on between two ridges of mountains, which in ſome places come pretty cloſe together, and in others leave room for very extenſive plains. A little beyond Perotte, we began to ſee the famous mountain of *Oriſaba*, ſaid to be the higheſt in Mexico. When we got to the hamlet of *Sant-Yago*, we were but two leagues from this mountain, which then exhibited a moſt pleaſing proſpect.

Its top was wholly covered with ſnow, whilſt the foot diſplayed the lovely verdure of rich cultivated land. This mountain of Oriſaba is ſeen from Mexico, which is no leſs than twenty leagues diſtant.

Along this road from Perotte to the capital, you find large quantities of calcined ſtones ſcattered about in many places. The village of *Hapa* eſpecially is ſurrounded with it, and all the houſes are built with this ſtone. We arrived at this village on Good Friday evening. This day of ſad ſolemnity for the Roman church, is not leſs ſo to the Mexicans than to us, but they have an odd way of keeping it. As we entered the village we met a very numerous proceſſion; at the head went a ſtatue of the holy Virgin, carried by young women in maſks: a great croud of people followed, likewiſe maſked;

ſome

ſome with guitars, ſome with baſſoons, who played the moſt groteſque muſic; inſomuch that we ſhould rather have taken this proceſſion for a carnival maſquerade than a religious ceremony, had it not been for the prieſts who attended it, and whoſe gravity made the moſt ridiculous contraſt. Is this to be wondered at? Force of arms could make but very bad chriſtians of theſe people, and their ſtupidity has made them improve upon the ignorance and ſuperſtitious abuſes laid to the charge of the Spaniſh monks, who are moſtly entruſted with the care of the Indian pariſhes.

We arrived at *Mexico* on Eaſter Day, March 26, at noon. Before we entered the city, we met the Marquis de la Torre, Inſpector of infantry. The moment he ſaw us, he went and gave notice of our arrival to the Viceroy, who ſent orders that

we ſhould be ſuffered to enter the city without any ſearch, and conducted to the houſe of the Jeſuits, where a lodging was prepared for us. We had no ſooner alighted there, but four gentlemen came to conduct us to the palace. I am at a loſs for words to expreſs the friendſhip and politeneſs ſhewn us by the Marquis de Croix, Viceroy of Mexico, and by his whole court. He left nothing undone to procure us whatever we wiſhed for, and to make our ſtay at Mexico agreeable to us. We had no table but his own for the four days we continued in the town, and he was ſo obliging as to ſend a cook to dreſs victuals for our attendants after the French faſhion. The next day after our arrival, he lent us one of his coaches to go about the town.

Mexico, the capital of the province which bears that name, is ſituated on the banks

banks of a lake, and built upon a fen, croſſed by a multitude of canals, conſequently the houſes are all built upon piles. The ground gives way in many places, and many buildings are obſerved to have ſunk upwards of ſix feet, without any viſible alteration in the body of the building: one of theſe is the cathedral, which I ſhall ſpeak of hereafter.

The ſtreets of Mexico are very wide, perfectly ſtrait, and almoſt all interſect each other at right angles. The houſes are tolerably built, but not much ornamented either within or without; their make is the ſame as in Spain.

There is no very remarkable edifice at Mexico. The Viceroy's palace is in a ſpacious and pretty regular ſquare, with a fountain in the middle. The only merit of this palace is, that it is built very ſolid. No decorations are to be found there.

Within

Within its circumference are three handſome court-yards, with each a fountain in the middle. The mint ſtands behind this palace, and is a noble building. Upwards of a hundred workmen are conſtantly employed there in coining piaſtres for the King of Spain, out of the enormous maſſes of ſilver brought thither by the owners of the mines, who exchange them for coin. It is ſaid, about fourteen millions of piaſtres are ſtruck yearly in this mint.

The moſt ſumptuous buildings are the churches, chapels, and convents. There are a great many in this city, which are very richly ornamented, and among others the cathedral. The rail round the high altar is ſolid ſilver; and what is ſtill more coſtly, there is a ſilver lamp, ſo capacious that three men get in to clean it: this lamp is enriched with figures of lions' heads, and other ornaments of pure gold.

The

The inſide pillars are hung with rich crimſon velvet, enriched with a broad gold fringe. This profuſion of riches in the churches at Mexico is not very ſurpriſing to whoever has ſeen the cathedral of Cadiz, and the immenſe treaſures contained in it. Gold and precious ſtones are there laviſhed upon the ſacred veſſels and ornaments; and the images of the holy Virgin and other ſaints are either ſolid ſilver, or clad in the richeſt garments.

The outſide of the cathedral of Mexico is unfiniſhed, and likely to continue ſo; they are afraid of increaſing the weight of the building, which already begins to ſink, as before noticed. I ſhall ſay nothing of the other churches; I believe there are as many as there are ſaints in the calendar.

The city of Mexico contains three ſquares; the firſt is the *Maior* or great ſquare,

ſquare fronting the palace, the cathedral, and the market-place, which is a double ſquare ſurrounded with buildings: This ſquare is in the center of the city. The ſecond, adjoining to this, is the ſquare called *del Volador*, where the bull-feaſts are held. The third, is that of *Santo Domingo*. Theſe ſquares are tolerably regular, and each has a fountain in the middle. To the north of the town, near the ſuburbs, is the public walk, or *Alameda*. A rivulet runs all round it, and forms a pretty large ſquare, with a baſon and *jet d'eau* in the middle. Eight walks, with each two rows of trees, terminate at this baſon like a ſtar; but as the ſoil of Mexico is unfit for trees, they are not in a very thriving condition. This is the only walk in or near to Mexico; all the country about it is ſwampy ground, and full of canals. A few paces off, and facing the Alameda, is the *Quemadero*; this is the place where they burn the

Jews,

Jews, and other unhappy victims of the awful tribunal of Inquiſition. This Quemadero is an encloſure between four walls, and filled with ovens, into which are thrown, over the walls, the poor wretches who are condemned to be burnt alive; condemned, by judges profeſſing a religion whoſe firſt precept is Charity.

The ſhort ſtay we made at Mexico did not permit me to take a fuller ſurvey of the place. I was told there was a Spaniſh play-houſe, but I was not tempted to go. I had enough of one at Cadiz.

I found a Frenchman at Mexico who ſpoke the Spaniſh and Mexican languages tolerably well, and was perfectly acquainted with all this country, having lived in it many years. I took him for my interpreter, as I thought he would be very ſerviceable to me for the remainder of our journey, and eſpecially in California.

As

As we went further on, we were to meet with Indians more ſavage than before; the Viceroy therefore thought proper to give us a guard of three ſoldiers, to defend us againſt the robbers who infeſt thoſe parts. Troops of fierce and unconquered Indians, called by the Spaniards *Indios bravos*, attack travellers when they find themſelves ſtrongeſt, murder them, or at leaſt, after ſtripping and tying them to the neighbouring trees, they carry off their mules and baggage to ſome bye places, known to none but themſelves, where they ſhare the money, and hide the reſt of the booty. Our guides told us, that ſome of the foreſts and mountains we paſſed by, conceal immenſe treaſures hoarded up by theſe banditti: they are eaſily known by a handkerchief which they hold between their teeth to hide their faces. When a traveller ſees an Indian thus maſked, the ſafeſt way is to be beforehand with him, and to kill him

if

if poſſible. We were ſo lucky as to meet with none. Having provided ourſelves with neceſſaries for our journey, we ſet out from Mexico the 30th of March, 1769. Mr. Doz and Mr. Medina had hired a wheel carriage, but for my part, as I had been told we ſhould meet with bad roads, I choſe to go on horſe-back. 'Tis true I did not ride the eaſier for it, but I eſcaped a thouſand miſchances which befell our two Spaniſh officers, and which retarded us more than once.

From Mexico to San-Blas, where we were to embark to croſs the Vermeille ſea, they reckon about one hundred and ninety leagues. The farther you go from Mexico, the fewer habitations you meet with, and the road is often very rough, dangerous, and full of precipices. In moſt places where we ſtopped, we hardly found bread, and every thing in that part of the country wears the face of the moſt pinching penury.

Forty

Forty leagues from Mexico we found the little town of *Queretaro*, remarkable for a very famous manufactory of cloth. This town is pretty well built; it ſtands againſt the ſlope of a mountain, which is joined to another, farther off and higher, by a noble aqueduct, which conveys the water from the upper to the lower one, from whence it flows to all parts of the town. This aqueduct is a very ſolid piece of workmanſhip. Theſe kind of works are very common in Mexico, and are the only remarkable performances in the way of building.

It was near Queretaro that I had the ſatisfaction, repeatedly to ſee a phænomenon realized, which I had oftener ſuſpected than ſeen in France; I mean the lightning riſing from the earth inſtead of iſſuing from the cloud, as it is commonly thought to do.

On

On the 3d of April in the evening, being then near *Molino*, a little hamlet about thirty-ſix leagues from Mexico, I obſerved to the ſouth a great black cloud, at a moderate height above the horizon: the whole hemiſphere about us had a fiery aſpect. This cloud was ſupported, as it were, with three columns at equal diſtances, and their baſis almoſt met the horizon. All the while it remained in this ſtate, frequent and ſmart flaſhes of lightning appeared in three places of the cloud over theſe columns; and at the ſame time ſtreams of electrical light darted from the correſpondent points of the horizon below, as in an aurora borealis. Soon after, the cloud came lower down, and then it was that we ſaw inceſſant lightnings riſing like ſo many ſky rockets, and flaſhing at the top of the cloud. I was the more convinced that I was not miſtaken, as in this obſervation, the firſt who took notice of the phænomenon were,

all my attendants, the interpreter, the ſoldiers, none of whom could be under the influence of any ſyſtematic prejudice. Once only the lightning ſeemed to iſſue from the cloud. Two days after, we ſaw the ſame thing again, and plainly diſtinguiſhed the lightning riſing from the ground, nor was its motion ſo ſwift but what we could diſcern its origin and direction. The reader may ſee what I have ſaid on this ſubject in the Memoirs of the Academy for the year 1764, and in my Journey to Siberia.

Eight days after we had left Mexico, we arrived at *Guadalaxara*. This is a conſiderable town, and a biſhoprick. We reſted two days in this place; it was what I greatly wanted, after a journey of a hundred leagues, upon ſorry mules, and in bad weather and deteſtable roads.

The

The ninth we went from Guadalaxara, and lay at a ſugar houſe called *Mutchitilté*. This place is ſurrounded with mountains, piled up, as it were, one above another, which make it a moſt frightful ſituation. From the middle of a rock, on the loftieſt of theſe mountains, a ſpring guſhes out, which falling two hundred feet perpendicular upon another rock below, forms a caſcade or ſheet of water, which ſtrikes the beholders with terror and admiration. It is impoſſible to conceive a more frightful and dangerous road than that which we travelled for near five leagues after we left Mutchitilté; this road, which is hardly four feet wide, is cut on the ſlope of a mountain that riſes almoſt perpendicular; the road is about half way up, ſo that on one ſide you are hemmed in by the mountain, and on the other in danger of falling down ſuch deep precipices, that in ſome places you hardly diſcern the tops of the

talleſt fir-trees in the vale below. To mend the matter, in this narrow paſs we unluckily met a caravan of mules going the contrary way. What to do we did not know, and were much afraid for our mules that carried our larger inſtruments; however, we got clear of them, and ſoon came to a pretty good road, which brought us to the little town of *Tepik*, where we only ſtopt to eat our dinner, and haſtened to San-Blas, where we arrived the next day, April 15, after ſpending twenty-eight days in croſſing Mexico.

San-Blas is a very ſmall hamlet, ſituate on the weſtern coaſt of Mexico, at the mouth of the river *S. Pedro*. It is but within theſe few years that the Spaniards have made a ſettlement there, for the conveniency of tranſporting the troops and proviſions they ſend into California.

The

The marquis de Croix, viceroy of Mexico, had long before ſent orders to the commandant of San-Blas to hold a veſſel in readineſs to carry us over to California immediately upon our arrival. None of the paſſage boats happened to be in the harbour when he received this order, ſo that he had a little packet boat built on purpoſe with all expedition, and it was expected to be caulked and launched within ten days after our arrival; but we could not afford to wait ſo long. The paſſage from San-Blas to Cape San-Lucas is indeed but about ſixty leagues, but it ſometimes proves a very tedious and difficult one, owing to the calms and currents ſo frequent on the Vermeille ſea. We had no time to ſpare, as we were to make our obſervation the 3d of June. Very luckily for us, a packet boat came into the harbour the very evening of our arrival, which was immediately allotted for our ſervice. We fixed upon the

fourth day for our departure, allowing ourſelves but juſt time to provide victuals, and whatever elſe we were likely to want, in a country where nothing is to be got. The Spaniſh officers ſhipped materials on board the veſſel for erecting a complete obſervatory; for my part, I only took wherewithal to make a tent, and a great beam of cedar on which to hang up my clock.

The pilot gave us but poor encouragement, by telling us how, the year before, he had been one and twenty days going over from San-Blas to San-Lucas, and that, at a better ſeaſon of the year. This ſtartled me, and I was in ſome doubt whether it would not be more adviſeable to remain on the continent of Mexico, than to run the venture of being out at ſea at the time of the obſervation; but I ſoon found I muſt give up this ſcheme, on being told that the ſtated rains were going

going to ſet in, before the end of May, and would continue with little or no interruption till the end of June. The beſt thing we could do was to put to ſea, and endeavour to reach the oppoſite ſhore of the Vermeille ſea, where we might hope for a clearer ſky.

We ſailed out of the harbour on the 19th of April, and ſoon found what the pilot had foretold. The firſt fortnight we were tantalized with calms, contrary winds and currents. At laſt, the 4th of May, for the firſt time, we ſteered full north, bearing for the cape; but there was ſo little wind, and that little was ſo often interrupted with calms, that we were near five days getting up to the port of Mazatan, about thirty-five leagues north of San-Blas. If we had gained a little in latitude, we had made very little progreſs in longitude. We then began to deſpair of getting to California in time for

the obſervation, which would have been a moſt cruel diſappointment.

Our pilot thought he could perfectly account for the contrariety of the winds, by imputing it to the wrath of Heaven for our ſins. This he endeavoured to avert by an offering to S. Francis Xaverius, which he laid upon the binacle, beſeeching him to ſend us a fair wind. The devout pilot's remedy did not preſently take effect, for the following days we had a ſucceſſion of calms and contrary winds.

Then indeed our ſituation became every day more deplorable; our proviſions begun to run ſhort, eſpecially the water: we were obliged to ſtint ourſelves to a pint a day, and even this was deteſtable water, having been put into vinegar caſks. All theſe trifles would have been nothing, could we have flattered ourſelves with ſome gleam of hope. We were in the

25th

25th day of our paſſage, and only eighteen remained to the tranſit, and we were yet a great way from the place of our deſtination. It is true, that having gone pretty far north, the currents and the prevailing winds were now rather in our favour. From this time, it was my fixt reſolution to land at the firſt place we could reach in California; I little cared whether it was inhabited or deſart, ſo as I could but make my obſervation.

At laſt, by the help of ſome favourable gales and currents, we got ſight of the land of California, which we judged to be near Cape S. Lucar, diſtant about eighteen leagues: we drew near the next day with a gentle wind. The 18th at night we were but five leagues from land. I was ſtrenuous for landing at the neareſt place, but as I was ſingular in my opinion, the whole day was ſpent in altercations. The Spaniards wanted to go and land in the

the bay of San-Barnabé, which was fifteen leagues farther, conſequently this would have prolonged our navigation perhaps for ſeveral days; for in order to get at this bay, we had to encounter the north and north-weſt winds, which blew almoſt conſtantly. Theſe gentlemen objected to me that we ventured the loſs of the ſhip in landing at Cape San-Lucas; I made anſwer that I was confident his Catholic Majeſty had rather loſe a poor little pitiful veſſel, than the fruits of ſo important an expedition as ours; that beſides, we were not the firſt that had landed at the Miſſion of San-Joſeph. The maſter, whom we appealed to, was of my opinion; he told us that indeed the landing would be more difficult and tedious at this place than at San-Barnabé, but that he believed he could anſwer for the ſafety of the ſhip and paſſengers. In conſequence of this deciſion, which he gave us under his hand, it was determined

that

that we ſhould land at San-Joſeph. We accordingly caſt anchor the 19th of May, half a league from the coaſt, oppoſite the mouth of the little river belonging to that Miſſion. But though we were at the end of our voyage, we were by no means at the end of our fears. A freſh gale ſprung up from the eaſt. A fortnight ſooner, this wind would have been of ſervice to us, but now it was very dangerous, and we were afraid of being ſtranded upon the coaſt. Mr. Doz and Mr. Medina begun to upbraid me with having inſiſted upon landing at San-Joſeph, and ſo did the pilot. This wind, they ſaid, would have been for us in the bay of San-Barnabé. It is an eaſy matter to judge by the event; beſides, the day before, I had ſimply propoſed my opinion, and theſe gentlemen, no doubt, thought it a good one, or they would not have agreed to it. The event vindicated me in my turn; for the wind abating,

abating, we got and eagerly ſeized a favorable moment for landing.

The pilot immediately ſent out the long boat, to reconnoitre the coaſt, and to look out the moſt convenient place for landing. I durſt not venture my inſtruments in this firſt attempt, and only put ſome of my ſmall effects into the boat. They landed them with great eaſe. I then ſent away my moſt material inſtruments by the ſecond turn, along with Mr. Pauly and Mr. Noel, and reſerved myſelf for the third. The ſecond landing was not ſo ſucceſsful as the firſt: Mr. Pauly wrote me word from the water-ſide that they had been in great danger, the boat having been ſeveral times under water, but happily they came off with no other harm than their fright, and being very wet, as were all the cheſts. This laſt circumſtance made me extremely cautious in removing my clock, which I had kept by me, and for which I dreaded the

the ſea water. I therefore wrapped it up very cloſe, and ſat down upon it myſelf, to keep it dry in caſe the waves ſhould chance to waſh us.

Our fate now depended entirely upon the dexterity of the maſter, and the exactneſs of the ſailors in executing the maneuvre. In the two former turns, they had marked the track we were to keep, by means of a buoy, or floating caſk. Our maſter, with his eye fixt upon this mark, guided the boat that way, through a multitude of billows, which with a horrid roaring daſhed againſt the ſhore, or amongſt rocks all covered with foam. The ſailors on their part, attentive to the word of command, now rowed with all their might, now again ſtood ſtock ſtill, either to avoid a wave ready to break over the boat, or to keep in the way of another that might waft us aſhore. It was by this maneuvre, executed with the utmoſt dexterity and ſucceſs,

ſucceſs, that at laſt we got ſafe to land on the coaſt of California, at the entrance of the river of San-Joſeph. Night was coming on; ſo, determined not to go to San-Joſeph till morning, I laid me down by the water-ſide. Then it was, that caſting my eyes upon my inſtruments that lay all round me, and not one of them damaged in the leaſt, revolving in my mind the vaſt extent of land and ſea that I had ſo happily compaſſed, and chiefly reflecting that I had ſtill time enough before me, fully to prepare for my intended obſervation, I felt ſuch a torrent of joy and ſatisfaction, it is impoſſible to expreſs, ſo as to convey an adequate idea of my ſenſation.

The news of our arrival ſoon reached the miſſion of San-Joſeph; they directly ſent us mules. I went thither, leaving Mr. Pauly by the water-ſide to look after the baggage, which I could not carry away, but which was brought me the next

next day. I made haſte to eſtabliſh myſelf at San-Joſeph, and to prepare for my preliminary obſervations. Myſelf and all my train took up our abode in a very large barn. I had half the roof taken off towards the ſouth, and put up an awning, that could be ſpread out or contracted at will. All my inſtruments were fixed juſt as they were to ſtand to obſerve the tranſit of Venus. The weather favoured me to my utmoſt wiſh. I had full time to make accurate and repeated obſervations for the ſetting of my clock. At laſt came the third of June, and I had an opportunity of making a moſt complete obſervation.

Doubtleſs the reader will ſee with concern that Mr. Chappe's account ends here, where it would have been moſt intereſting, by the informations he might have given us, relating to California; but here, as in many other places, it has not

not been in my power to ſupply the want of the author's own account; thoſe who attended him not being able to give me any diſtinct information. All they have retained of that fatal country is the melancholy event of Mr. Chappe's death; what they have related concerning it is this.

An epidemical diſtemper raged at San-Joſeph, and had already ſwept away one third of the inhabitants, when Mr. Chappe came thither. They might have eſcaped the contagion by going on to Cape San-Lucas, and this was what the Spaniſh officers propoſed, but they were within a few days of the tranſit, and a ſecond removal would have loſt them ſome very precious moments. Mr. Chappe, leſs apprehenſive of endangering his life than of miſſing the obſervation, or making an imperfect one, declared he would not ſtir from San-Joſeph, let the conſequence be what it would.

In

In the mean time, the numbers that were daily carried off, too plainly ſhewed the danger he was in, but every day brought him nearer to the object of his wiſhes, and Mr. Chappe cared for nothing elſe. The joy he felt when they were accompliſhed, was ſoon damped by the mournful ſpectacle to which he was witneſs.

On the 5th of June, two days after they had obſerved the tranſit of Venus, Mr. Doz, Mr. Medina, and all the Spaniards belonging to them, to the number of eleven, ſickened at once. This occaſioned a general conſternation; the groans of dying men, the terror of thoſe who were ſeized with the diſtemper, and expected the common fate, all conſpired to make the village of San-Joſeph a ſcene of horror. Whoever was intimately acquainted with Mr. Chappe, always obſerved in him two leading ſentiments, the

love of glory, and humanity. What a ſituation was this for a heart like his! Almoſt the only one among them all, who was yet free from the infection, he delighted in aſſiſting all around him, but too ſoon he was himſelf ſeized with the diſtemper. Reduced to want that aſſiſtance he had afforded the reſt but juſt before, not one was left that was able to adminiſter it. Mr. Pauly and Mr. Noel had ſickened before him, and lay at the point of death; the only truſty ſervant was in the ſame condition: in a word, every one, Indians, Spaniards, and Frenchmen, all were either dying or haſtening towards death.

Mr. Chappe had brought with him from France a little cheſt of medicines and ſome phyſical books. In this emergency he was an occaſional phyſician. He examined the ſymptoms of the diſeaſe; then conſulting his books, he endeavoured to

to find out the proper remedies. But he ſoon found himſelf as much at a loſs as thoſe who formerly conſulted the oracles, whoſe ambiguous anſwers frequently admitted of two oppoſite meanings, and left them as much in the dark as before. Mr. Chappe had a violent pain in his ſide, and was delirious at times; in this caſe his books recommended bleeding, but then they expreſsly forbad it, and adviſed purgatives, where the diſtemper proceeded from a collection of bile. This was what he could not diſtinguiſh. Mr. Chappe, at all events, determined for purgatives. In the intervals of the paroxyſms, he was forced to prepare his own medicines; he durſt not truſt the only healthy man among them, becauſe a few days before, he had like to have poiſoned Mr. Noel, by miſtaking one drug for another.

Such was Mr. Chappe's dreadful ſituation. After three ſucceſſive fits in three

days, he took two doſes of phyſic, and found himſelf greatly relieved. But too much emboldened by this ſucceſs, ſpurred on by a blameable, becauſe an imprudent zeal, he would needs obſerve the eclipſe of the moon the 18th of June, the very day he had taken his ſecond phyſic.

It will be matter of admiration to look over the account of this obſervation. It is inconceivable how Mr. Chappe, low as he was, labouring under his malady, weakened by the fever fits he had gone through, could lend as cloſe an attention to this phænomenon, as the ableſt obſerver could have done in full health. Indeed he had much ado to hold out to the end of the obſervation. He was taken with a fainting fit, and a pain in his head, which continued till his death. The ſtrength of his conſtitution ſtill held out, but this only ſerved to prolong his ſufferings. He deſired to be let blood; his

his interpreter, a ſurgeon who had never practiſed much, and who was himſelf ſick, tried to bleed him, but miſſed; however, encouraged by Mr. Chappe, he tried again, and ſucceeded. This did but encreaſe the diſorder. In the evening he complained of an obſtruction; he tried to ride out on horſeback, and found himſelf rather eaſier; but ſoon after, his fever returned, and he lay in a moſt deplorable condition; ſuffering the ſharpeſt pains, and deſtitute of all aſſiſtance. The village of San-Joſeph was by this time a mere deſert: three fourths of the inhabitants were dead, and the reſt had fled to ſeek a leſs infectious air; but the contagion had already ſpread far and wide. Thus totally forſaken did Mr. Chappe ſpend his laſt moments. He expired on the firſt of Auguſt, ſurrounded with Mr. Pauly, Mr. Noel, and the reſt of his attendants; but they were all ſo languid, that they had hardly

ſtrength to crawl to him, and reach out their arms to catch his laſt breath.

Mr. Chappe ſaw death approaching, with the ſteadineſs and ſerenity of a true philoſopher. The intent of his voyage was fulfilled, and the fruits of his obſervation ſecured: he ſaw nothing more to wiſh for, and died content. The public and his friends are the only loſers by his death. Their tears are the beſt encomium on his memory, and the moſt flattering reward of his labours. The reader will doubtleſs ſhare them at the recital of ſo affecting a ſcene.

Mr. Doz and Mr. Medina did their beſt to pay their laſt reſpects to Mr. Chappe. The prieſt or miſſionary of San-Joſeph was long ſince dead, as were almoſt all the inhabitants. The Spaniards, the French, and every one of the ſurvivors, then collected what little ſtrength they had

had left, and performed the moſt melancholy of all offices, and this cruel moment rouſed all their fears, with the dread of the like tremendous fate. Of the Spaniards, Mr. Medina was in ſuch a weak and languid ſtate, as left him little hopes of ſurviving Mr. Chappe much longer. Of the French, Mr. Dubois was not leſs dangerouſly ill. As for Mr. Doz, Mr. Pauly, and Mr. Noel, they were recovering apace. Though they were all impatient to get away from San-Joſeph, they were forced to wait there two months longer for the veſſel Mr. Chappe had been promiſed from San-Blas, to fetch and carry them over to Mexico. Even the ſick did not more ardently wiſh for the recovery of their health, than for the arrival of that ſhip. At laſt we were told ſhe was come to an anchor over againſt St. Ann's, in the little bay of *Ceralvo*. Mr. Doz and Mr. Medina, with all their attendants, except three that were dead,

went therefore to St. Ann's, together with Mr. Pauly, Mr. Noel, and Mr. Chappe's ſervant. As to the poor watchmaker, he was not in a condition to be removed. They left him at San-Joſeph, recommending him to ſome Indians who ſtill remained in the place, in caſe he ſhould recover. Mr. Pauly however, a few days before he embarked, ſent to fetch him if it was poſſible to remove him, but he was no more. No doubt the grief of ſeeing himſelf forſaken in an unknown country haſtened his death. Our travellers had now nothing more that could detain them in California. They croſſed the Vermeille ſea, where they met with very ſtormy weather, and were in real danger, but landed at laſt at San-Blas. There Mr. Medina found himſelf exceedingly ill. He had been very low from the firſt moment he was taken ill at S. Joſeph. The ſight of Mr. Chappe's death, the fatigue of removing to St. Ann's, and then croſſing

croſſing the ſea, had made him worſe, and brought him to his grave. He died ſoon after the departure of Mr. Doz, who was obliged to leave him, and to go to Mexico.

Mr. Medina, having ſhared the dangers, the labours, and the unhappy fate of Mr. Chappe, well deſerves to ſhare with him the encomiums and regrets of the public. The Spaniſh aſtronomers were not leſs ſucceſsful than Mr. Chappe in their obſervation of the tranſit of Venus. He on one ſide, and they on the other; they vied with each other in exerting their utmoſt care and ſkill in the obſervation of that phænomenon. A noble emulation kept them aſunder at that moment, to diſpute a ſucceſs which could only turn out to the benefit of the public. May the competition of nations never propoſe any other end!

NATU-

NATURAL HISTORY

OF THE

PROVINCE

OF

MEXICO.

Extract of a Letter from Mexico addreſſed to the Royal Academy of Sciences at Paris, by Don Joſeph Anthony de Alzate y Ramyrez, now a Correſpondent of the ſaid Academy, containing ſome curious particulars relative to the Natural Hiſtory of the Country adjacent to the City of Mexico [5].

GENTLEMEN,

THE departure of Mr. Pauly for Paris procures me a favourable opportunity of ſending you ſeveral of the curioſities of

[5] This letter, written in Spaniſh, was delivered to the academy by Mr. Pauly, together with Mr. Chappe's papers: Mr. Pingré was deſired to tranſlate it into French, in order to its being read at one of their private meetings. Every thing is here left out that is foreign to natural hiſtory, or of little or no conſequence to the public.

this

this country [6]. I think it will not be amiſs to ſubjoin an explanation, which however I ſubmit to your judgment and learning.

I have been greatly affected by Mr. Chappe's death. New Spain has loſt in him a man whoſe talents would have been of great ſervice, to make known a thouſand natural curioſities which here lie buried in oblivion. Thoſe who are fitteſt to reſcue them from it, either diſregard them, or are not able to communicate them to the public.

[6] The cheſt containing the ſpecimens of natural hiſtory, mentioned here by Don Alzate, did not come to hand till long after this letter. The academy then appointed M. de Juſſieu and M. Fougeroux de Bondaroy to examine them, and to make their report. Mr. Fougeroux has favoured me with his obſervations on the ſpecimens, and has given me leave to inſert the following notes, for the better underſtanding of Don Alzate's letter.

By

By what I can collect from Mr. Pauly's account, Mr. Chappe muſt have died of an epidemical diſtemper, which we call here, in the Mexican language, *Matlazahualt*, but at Vera Cruz, Carthagena, and elſewhere, goes by the name of the black vomit. This diſtemper is the ſcourge of Mexico. In 1736 and 1737 it ſwept away above one third of the inhabitants of the capital; and in 1761 and 1762, it made yet greater devaſtations, and depopulated this kingdom. At leaſt twenty five thouſand died within the walls of this city; it is true this time, beſide the contagious diſtemper, an epidemical ſmall-pox raged here, which contributed not a little to the havoc that was made.

The Matlazahualt ſeems to me to proceed entirely from the bile mixing with the blood. Thoſe who are ſeized with it look pale, and moſt of them bleed at the noſe

noſe and mouth, which happens when a criſis is coming on [7]. A relapſe is more dangerous than the firſt, and moſt of the ſick do relapſe. In the contagion of 1761, (the only one I have had an opportunity of obſerving, as I was born during the courſe of the former.) I took notice that purgatives and bleeding were very dangerous, inſomuch that perſons who were let blood or took phyſic for other diſorders, were directly ſeized with the Matlazahault. This diſeaſe chiefly attacks the Indians, and always begins by them. In 1761, above nine thouſand patients were admitted into the Royal Hoſpital (which is only for Indians) in the ſpace of twelve

[7] Mr. Chappe had no vomiting. His complaints were violent fever fits, great pains in his head, a load upon his cheſt, which he called an obſtruction. This by no means anſwers to the deſcription given here by Don Anthony de Alzate.

months,

months, and no more than two thouſand recovered.

Few plants afford ſuch botanical curioſities as the *Maize*, or Indian corn. It ſhews in the cleareſt manner, and with the greateſt certainty how the ſeed feeds in the plant, and how, when the grain is repleniſhed, the plant remains inſipid, and conſequently that the juices it contained at firſt, have been exhauſted to nouriſh the ſeeds, after they had been brought to perfection in the plant. This is ſo true, that the plants of maize that bear no ſeed, (and theſe are very numerous here) are always extremely ſweet. They are brought to market at Mexico, and the children are as fond of them as they are of ſugar canes, and indeed they call them *canes*. I have preſſed ſome of theſe plants, and boiled up the juice, and it actually yielded real ſugar. In Mexico, when they have ſowed the maize, they let it grow with-

noſe and mouth, which happens when a criſis is coming on [7]. A relapſe is more dangerous than the firſt, and moſt of the ſick do relapſe. In the contagion of 1761, (the only one I have had an opportunity of obſerving, as I was born during the courſe of the former.) I took notice that purgatives and bleeding were very dangerous, inſomuch that perſons who were let blood or took phyſic for other diſorders, were directly ſeized with the Matlazahault. This diſeaſe chiefly attacks the Indians, and always begins by them. In 1761, above nine thouſand patients were admitted into the Royal Hoſpital (which is only for Indians) in the ſpace of twelve

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out any culture, and then it turns to canes, and bears no fruit at all.

Though ſeveral authors have given very good deſcriptions of the *Maguey*, the plant from which they draw the *pulco*, a kind of drink which ſupplies the want of wine, I think none has taken the pains to enquire what quantity of liquor may be extracted from this plant [8]. A Maguey will yield two *arobes* of liquor in the four and twenty hours, and continues to yield as much every day for ſix or eight months together [9].

I ſend you likewiſe a ſimple, which I think the beſt that has hitherto been uſed

[8] The inhabitants of Xachimilco underſtand beſt how to cultivate the Maguey, and it grows larger there than any where elſe.

[9] The arobe is about twenty-five pounds, ſo that we may reckon at the rate of four arobes to the hundred weight.

for

for dying in black. It is called *Caſcalotte*[10]. It is a large tree, and grows only in very hot countries. The leaf is ſmall, and very much reſembles the *Huiſiache*, which I ſhall ſpeak of next. It bears a yellow flower. The growth of this tree is as ſlow as that of the oak, or ſlower. I need not deſcribe the fruit, as I ſend you a ſpecimen of it. Galls are not to be had here but at the apothecaries; they make uſe of them in their medicines, and get them from Europe. We could not dye

[10] The caſcalotte is a ſpecies of acacia; its fruit is a long and broad pod, often crooked: it conſiſts of a thin woody ſhell, covered over with a thick rind. It is a little reddiſh on the outſide, and when dry, is eaſily reduced to a fine powder. The pod contains many flattiſh ſeeds, of a light and bright yellow.

It is well known that the pods of almoſt all the acacias yield a black colour; they may likewiſe be uſed in the tanning of leather. Sloane ſays the acacia indica is uſed in making ink. (Hiſt. Jamaica.)

black here, if nature had not furniſhed us with the caſcalotte. The dye that is procured from this ſimple is better, becauſe leſs corroſive, than any other; and indeed black is moſt generally worn here, as it has been found by experience to be the moſt laſting. Even the moſt common hats loſe nothing of their firſt luſtre, and wear all to pieces without the leaſt alteration in their colour.

The *Huiſiache*[11] is likewiſe uſed for the black dye, but it is not ſo good as the Caſcalotte. Its chief uſe is for ink. This tree requires warmth, yet they have the bad cuſtom of planting it in a cold ſoil, ſuch as that of the town of Mexico,

[11] The *Huiſiache* is likewiſe a kind of acacia, not unlike the *Inga* or ſugar pea of America, deſcribed by ſeveral botaniſts. The ſhell of this pod is hard, thick, and black; it contains ſeveral ſeeds, each in its own cell, the ſhell being divided into ſo many partitions.

where

where there are ſeven growing, beſides thoſe that are within the encloſure of the baths.

I ſend you an exact drawing of the monſtrous tree of Attiſco, called *Ahuehuete*; its dimenſions are taken with the greateſt exactneſs. This tree is always extremely large. I ſend likewiſe ſome of the ſeed or nut, and the leaf[12].

Now

[12] The figure of this tree, ſent by Don Alzate, affording no criterion whereby to aſcertain its ſpecies, I have had recourſe to the fruit and a leaf, which were found in the ſame parcel, and upon inſpecting them, I am of opinion they may belong to the *cupreſſus luſitanica patula, fructu mivori.* (Inſt. page 587.)

The fruit is made up of ſcales, and the ſeeds within are placed as in the pine apple; ſo that it muſt be a true cypreſs, no way like the *cupreſſus foliis acaciæ deciduis*, in which every ſcale of the fruit covers a kernel. Beſide, the leaf found with the ſeeds of the mexican tree is made up of little leaves, that are not oppoſite, as in the acacia-leafed cypreſs. It reſults therefore from this

Now that I am upon the topic of monſtrous trees, it will not be improper to mention the *ſabino*, which ſtands in the church-yard of Popotta, a village about half a league from Mexico. Its trunk meaſures ſixteen *vares* and a half round. (Our vare is not quite three feet [12].)

There is another tree in the yard of the parſonage houſe, which exhibits a ſingular phænomenon. It is cuſtomary to tie the horſes to one of the boughs, ſo that the bark is all ſtript off, and nothing is ſeen but the bare wood. Notwithſtanding this, the branch preſerves its verdure, and bears

examination, that the tree Don Alzate ſpeaks of is not the acacia-leafed cypreſs; nor is it that of Portugal, though the ahuehuete really reſembles this in its fruit. It is therefore a new and undeſcribed ſpecies of acacia, and which would neceſſarily come into the genus of cypreſs.

[13] The trunk of this tree muſt then meaſure about fifty feet in circumference.

fruit

fruit juſt as if the bark was on. It is a fine tree, and bears very pleaſant fruit. It is what we call *ſopote blanco*.

I ſend you a ſeed of what we call *Chia*; we put it to infuſe for a couple of hours, ſweeten it with ſugar, and drink the liquor. It is from this ſeed that we extract the oil which our painters uſe for mixing their colours, and which gives our pictures ſuch a beautiful gloſs: perhaps in time it may be put to ſome other uſe. The way they draw the oil is by roaſting the ſeed, and then preſſing it [14].

I recollect a plant which I believe has not its fellow amongſt the known plants,

[14] The ſeeds ſent us by Don Algate belong to the plant which Linnæus calls *Salvia Hiſpanica*. This ſeed is come up here, and we have long had the very ſame plant. The Italians cultivate it too. Mr. Harduini has given a deſcription of it with a plate.

I mean the *Cacahuate* [15]. We know of many plants that feed us by their roots, but that a plant ſhould produce its fruit in the very root, is, I think, a property peculiar to this I am ſpeaking of. I ſend you the plant and the fruit, and will tell you how it is cultivated. It is ſown in hot countries, and will ſucceed in the temperate. They ſow the fruit at a foot diſtance, and let the plant ſtand till it is about half a foot high; then they bury that branch (which they call *Fiſtolillo*) ſo as that both extremities, the root and the top, lie under ground till it is gathered in.

[15] This plant is the *Arachinna*, or *Arachis*, of Linnæus, an American ground piſtacho. It bears a pod which is very tender and brittle, eſpecially when it is dry. Within this pod are two almonds of a very pleaſant taſte, which gives them the name of ground piſtachoes. It is common in all the hot countries of America. It has been raiſed here in hot houſes, and has borne fruit. It ſinks its piſtil into the ground, and there the fruit ripens.

At harveſt time, they pull up the branches of the plant to take off the fruit, which is found in great plenty. Though they do not ſow it over again, the field will always yield a freſh crop from what was left behind. It is incredible what quantities are conſumed in this kingdom, eſpecially for their collations. They roaſt it over a ſlow fire to prepare it for eating. It is alſo put to other uſes to ſupply the want of almonds. This fruit is unwholeſome, and particularly hurtful to the throat. I muſt obſerve here that the plant bears its fruit, not in the original root, but at that end which was turned down into the ground. I muſt add one circumſtance more, which is, that this plant appears beautiful when the ſun ſhines, but withers when it withdraws.

I ſend you ſome viviparous ſcaly *fiſhes*, of which I had formerly given you an ac-

account [76]. What I have obſerved in them this year is—" If you preſs the belly with your fingers, you force out the fry before their time, and upon inſpecting them through the microſcope, you may diſcern the circulation of the blood, ſuch as

[16] Don Alzate has ſent thoſe fiſhes preſerved in ſpirits; their ſkin is covered with very ſmall ſcales; they vary in length from an inch to eighteen lines, and they are ſeldom above five, ſix, or ſeven lines in the broadeſt part. They have a fin on each ſide near the gills, two ſmall ones under the belly, a ſingle one behind the anus, which lies between the fin and the ſingle one; the tail is not forked; laſtly, this fiſh has a long fin on the back, a little above the fin, which is under the belly.

We know of ſome viviparous fiſhes in our ſeas, ſuch as the loach, &c. moſt of theſe have a ſmooth ſkin without any ſcales. The needle of Ariſtotle is viviparous, and yet covered with broad and hard ſcales; I have caught ſome that had young ones ſtill in their womb. As to theſe viviparous fiſhes, it is a particular and new ſort, and we are obliged to Don Alzate for making us acquainted with it. It breeds in a lake of freſh water near the city of Mexico.

it

it is to be when the fiſh is grown up." If you throw theſe little fiſhes into water, they will ſwim as well as if they had been long accuſtomed to live in that element. The fins and tail of the males are larger and blacker than thoſe of the females, ſo that the ſex is eaſily diſtinguiſhed at firſt ſight. Theſe fiſh have a ſingular manner of ſwimming; the male and the female ſwim together on two parallel lines, the female always uppermoſt, and the male undermoſt; they thus always keep at a conſtant uniform diſtance from each other, and preſerve a perfect paralleliſm. The female never makes the leaſt motion, either ſideways or towards the bottom, but directly the male does the ſame.

Amongſt the ſingular *inſects*, the black ſpider of this country deſerves to be taken notice of. It greatly reſembles, in ſhape, the tarentula of the kingdom of Naples.

It

It may be about eight lines long; it is hairy, and of an aſh colour. It is never ſeen in the day time, and by night only in fair weather, but it forebodes approaching rain. It is an unerring barometer. This obſervation was communicated to me by a virtuoſo, and I have never known it to fail. Whenever I have ſeen theſe ſpiders, the weather conſtantly changed to rain within four and twenty hours.

The *Maripoſa plateada*, or ſilvered butterfly, appears to me, gentlemen, to merit your attention, as you have none of this kind, at leaſt it is not deſcribed by Mr. de Reaumur [17]. The bags which I ſend

[17] We have naker'd butterflies, which only differ from thoſe of Mexico and America in ſize. Ours are ſmaller, and ſomewhat fainter coloured; theſe varieties may be owing to the climate. The naker'd butterflies here ſpoken of, and ours are both diurnal butterflies. Mr. de Reaumur and Mr. Geoffroy have deſcribed the latter, and both ſay they are not acquainted with the caterpillar that

I ſend you are of a curious ſtructure. I do not believe any ſuch are to be found in

that produces them. It might be inferred from analogy, that theſe caterpillars, being of the claſs that produce diurnal butterflies, make no bean, but that the chryſalis faſtens to the boughs of trees, and are there metamorphoſed.

If Don Alzate's obſervation is juſt, and if the naker'd butterfly he ſends us really came out of this ſingular bean, we might gather ſome uſeful hints from this diſcovery. 1. As we have found in theſe beans the caſt-off ſkins of prickly caterpillars, we might conclude that the naker'd butterfly comes from a caterpillar of that kind. 2. Now that we are acquainted with the bean of the naker'd butterfly of Mexico, we might the better find out the bean and caterpillar belonging to that butterfly, ſo common in our own climates. But I have ſome ſuſpicion that the naker'd butterfly, ſent us by Don Alzate, did not really come out of that bean which he ſent along with it, and it were to be wiſhed this obſervation could be further verified. The ground of my ſuſpicion is, that Mrs. Merian has deſcribed the caterpillar belonging to this diurnal butterfly; ſhe looks upon it as one of thoſe that do not turn to a bean; and ſays, that the chryſalis is ſuſpended like moſt of the ſame claſs. (See Inſects of Surinam, vol. i. pl. 25.)

However

in Europe. You can beſt explain how the little butterfly, when he is juſt born, opens the lid or door of his bean, when you have examined how curiouſly it is adjuſted. I get a multitude of theſe beans every year, and could never yet find out how the butterfly works itſelf out, nor by what induſtry the caterpillar weaves its ſhell ſo ſkilfully, nor yet how the ſilks, being of ſuch a glutinous texture, do not cling together before the work is completed. I have much to ſay concerning our butterflies, but it ſhall be for another opportunity.

I think I told you, gentlemen, in a former letter, that I did not know of any petrifactions in this kingdom. I have ſince been informed there are ſome in a

However this be, the bean ſent by Don Alzate will ſtill be a curioſity, on account of the lid which the inſect contrives, and which he lifts up at will.

little

little place called *Chalma*; I intend to go thither, to acquire a thorough knowledge of theſe petrifactions. I have ſeen ſome very precious ſhells which were found at *Souvra*; they are of the ſame matter that is uſed for extracting ſilver and gold. I have been aſſured that in digging a mine in the province of *Roucra*, they found petrified human bodies, out of which they extracted a great deal of ſilver; among others the body of a woman holding her child in the attitude of ſuckling. The two bodies are perfectly petrified, and have yielded a conſiderable quantity of ſilver. As this relation appears to me to ſtand in need of confirmation, I choſe it ſhould be certified by the depoſition of eye witneſſes, and have accordingly written to ſome perſons of that province, and I wait with impatience for their anſwer.

I gave Mr. Chappe a grinder of ſuch an exorbitant ſize, that it weighed upwards

wards of eight pounds, was above ten inches long, and the reſt in proportion. What animal this tooth had belonged to, I am at a loſs to gueſs. It had been given me as a giant's bone. All I can affirm is, that the enamel of the tooth was in a great meaſure preſerved. A virtuoſo of this country has in his poſſeſſion a leg bone, which unfortunately is not entire; ſome part of it is wanting. The head of the femur meaſures a foot and a half in diameter. This bone was found near *Toluca*. The Indian of whom it was bought, made uſe of it to bar his door; this is no wonder, as the remainder of the bone is ſtill above five feet long. I am told the prieſt of the village of *Tecali* has lately diſcovered ſome bones of an enormous ſize, and, what is ſtill more ſurpriſing, he has found tombs proportionable to theſe bones. I ſhall carefully enquire into this fact, and ſhall tranſmit to you, gentlemen, whatever I can diſcover.

In

In your memoirs of 1744, mention is made of dead fiſh having been found in the wells of Mexico, in conſequence of the eruption of a volcano at Vera Cruz. This whole ſtory is deſtitute of all foundation. All the enquiries I have made, have not procured me the leaſt intelligence about it. Not a ſoul at Vera Cruz knows any thing of ſuch a volcano. At Mexico, nothing can be found in the wells; there is one to every houſe, but they never exceed ſix feet in depth. The water is found at three feet from the ſurface at moſt, and moſt frequently at one foot. How then ſhould dead fiſh be found there, when the very nature of the ſoil makes all ſubterraneous communication impoſſible

I ſhall here take notice of a ſingularity in the royal domain of the mines of *Pachuca*, in the immediate dependency of the department *del Salto*. It is a moun-

tain made up of ſtones of all imaginable ſhapes. Stones of any ſhape or ſize that can be wanted, are to be had there, ready cut, for the trouble of fetching, and lifting them off the heap. Theſe ſtones are not in horizontal but in perpendicular rows, and ſuch as is one of them, ſuch, you may be well aſſured, are all thoſe above and below it [18].

What I am going to relate, though not of the ſame kind, is perhaps not leſs curious. I mean a ſtone, how large I cannot tell, as the greateſt part of it lies ſunk in the ground. The outward ſurface is above three feet over; the colour that of black marble, except a ſpot, or rather an incruſtation of a different ſubſtance faſtened to it. The ſingularity of this ſtone conſiſts in this, that the ſlighteſt ſtroke

[18] This ſtone ſeems to be the *baſaltes*, the ſame with the Giant's Cauſeway in the county of Antrim in Ireland.

upon

upon it with the finger, cauſes a ſound with long vibrations; they call it the bell-ſtone, from the great reſemblance of its ſound with that of a bell. It ſtands in the bed of a river that is ſometimes dry, and which runs through the town of *Cuantla*, the capital of that diſtrict which we call *Ancilpas*, about eighteen leagues to the ſouthward of Mexico.

The following is a fact which I am witneſs to, and ſo will you, gentlemen, for I ſend you ſome of the petrifactions of the royal domain of the mines of *Huajannato*, which are inimitably beautiful. All the ſtones that are taken out of one of theſe mines have this property, that in whatever direction you divide them, they always exhibit an exact imitation of a Cedar. It is remarkable that in ſome of theſe ſtones, that part which forms the image of the cedar is pure ſilver, and the

reſt of the mine abounds in the ſame metal. This mine is known by the name of the *cedar mine*, both from the repreſentation on the ſtones, and from a fine cedar tree that actually ſtands at the entrance of the mine [19].

The

[19] In the cheſt ſent by Don Alzate to the Academy, we found a piece of ſilver ore, ſingular by the ſpatheux cryſtals it contains. Theſe cryſtals conſiſt of thin lamina of a beautiful white, and not very hard. When expoſed to the fire, they calcine and turn to plaiſter. This plaiſter is very fine and white, but rather coarſe to the touch; but we ſaw nothing that looked like a cedar. There is a ſilver mine in Peru, the ore of which runs into the form of a feather, or of fern, poſſibly the author had that in view.

Beſide theſe articles, Don Alzate's cheſt contained other ſeeds that were worm eaten, and are not come up; fragments of plants that could not be known, and to which they have aſcribed certain properties in that country. We likewiſe found ſome buds of a large magnolia, or tulip-laurel, called there *Yoloſochil*. Don Alzate ſays this flower emits a very fragrant ſmell, even when it is dry, and that the tree on which it grows thrives

The natural vitrifications, which the Indians call *peliſtes*, are to be found all over the kingdom. They abound at Mexico, chiefly in the northern part, but the place where they are found in the greateſt plenty is the village of *Zuiapequaxo* near *Vatladolid*. There are whole mountains of it in that part. Hence the village takes its name, which is that given to

thrives beſt in hot countries, where it grows very large.

Mr. Noel, a young painter, who accompanied Mr. Chappe, has put into our hands ſeveral drawings which he took as they paſſed through Mexico and California. Theſe drawings exhibit, in the vegetable claſs, a taper on which are found a monſtrous excreſcence, the flowers of a corallodendron, or immortal wood of America, and thoſe of another plant, which we are unacquainted with; in the animal tribe, fiſhes, zoophytes, the ſea hand, &c. a lizard, which we think a ſingular one, and is called a chameleon in that country, and a quadruped which does not ſeem to belong to any of the claſſes that are either deſcribed or known.

theſe vitrifications in the idiom of Michoacan [29].

The woollen threads I ſend you are called in the Indian language *tochomites*. They weave them into ribands. The Indians dye them in a method peculiar to themſelves, and very different from what is practiſed in Europe. For that purpoſe they only buy the ſcarlet ſeed; the other ingredients they mix with it are very inſignificant. Thus they dye all their woollen things red at a very trifling

[29] The vitrifications ſent by Don Alzate to the Academy are, *un laitier de volcan*, a true glaſs, compact, heavy and black: it is the ſtone of Galinace of the Spaniards, and probably the true obſidian ſtone of Pliny. The largeſt pieces found in Don Alzate's cheſt are moſtly three inches or three inches and a half over, and about three lines thick. His account ſhews, that there has formerly been a volcano on or near the ſpot where the city of Mexico now ſtands. The whole face of the country bears the marks of antient volcanoes, and no doubt there have been many in thoſe parts.

ex-

expence. As to their method, they keep it an impenetrable ſecret [21].

I ſhall conclude, gentlemen, by a ſingular fact, which in my opinion is analogous to electrical experiments. On an eſtate belonging to the late Don Alonzo de Gomez, ſecretary to the viceroy, ſituate in the juriſdiction of *Singuluca*, to the north eaſt of the capital, at the diſtance of about twenty-two leagues, one of the ſervants was lame with both arms; whether he was born ſo or not, I cannot tell. He was employed in tending the aſſes. Coming home one night from the fields, he was overtaken by a violent thunder ſtorm, and got under a tree for ſhelter. There the lightning

[21] There is commonly no great difficulty in dying wool; it is not ſo with cotton. Yet even for dying of wool, ſome preparations are requiſite, and it would be very odd if the Mexicans could do without them to dye theſe tochomites red.

ſtruck him, and left him inſenſible for ſome time. He received no other hurt, on the contrary, when he came to himſelf, to his great ſurpriſe and joy, he found himſelf reſtored to the free uſe of his arms and hands. The fact is certain; I have it from a divine of undoubted veracity, who was eye witneſs to it, and his teſtimony is the more to be credited, as he is totally ignorant of electricity or electrical matter. He barely relates the fact for its ſingularity, without pretending to account for it.

Such are, gentlemen, the obſervations I have the honor to communicate to you [22]....&c.

[22] The letter out of which this extract is taken, was read before the Academy, and was heard with great attention, and found to be very intereſting. We are farther obliged to Don Alzate for a very accurate map of Mexico, which he has delineated from the beſt accounts of ſuch travellers as he is within reach of conſulting in that country.

country. He has alſo ſent us a map, drawn up in Cortès's life time, by which it is evident that in thoſe early times they already knew California to be a peninſula, and the extent of it was as well aſcertained as it has ſince been by later diſcoveries. Had this map been publiſhed in his time, it would have ſaved many diſputes about California. The readineſs of Don Alzate y Ramirez to communicate to us whatever might be intereſting in a country ſo new to us, together with his talents and perſonal qualities, have deſerved the encomiums, and excited the gratitude of the members of the Academy, who have teſtified their ſenſe of his merit, by admitting him to be one of their correſpondents.

VOYAGE

VOYAGE

TO

NEWFOUNDLAND

AND

SALLEE.

VOYAGE

TO

NEWFOUNDLAND

AND

SALLEE,

BY M. DE CASSINI.

TOWARDS the middle of May, 1768, I received an order from the duke de Praſlin to repair to Havre-de-Grace, there to begin the experiments upon Mr. *Le Roy*'s time-keeper. The frigate *l' Enjouée*, on board of which I was to embark,

embark, was preparing to ſail towards the end of the month, ſo that I had but little time left to regulate the watches before they were ſhipped.

I ſet out from Paris with my father on the 20th of May, and arrived at Havre-de-Grace on the 23d. The weather being favorable, we began our obſervations the ſame day. We were ſoon able to ſet them nearly at the mean-motion, and by the 30th of May in the morning, after ſeven days obſervation, they were regulated, and ſent on board the frigate. The detail of all theſe operations will be given in their proper place.

We thought to ſet ſail on the 30th of May, at the evening tide, but were prevented by contrary winds, for ſeveral ſucceſſive days. Theſe, and the inſufficiency of the tides, detained us in the harbour

harbour till the ſpring tide of the new moon. My father returned to Paris, and I remained at Havre-de-Grace with Mr. Wallot (an active and ingenious young German), who had been induced by his taſte for ſcience to viſit France, and whoſe fondneſs for aſtronomy had determined him to attend me in this expedition, and to aſſiſt me in my operations. We improved the time we were forced to ſtay at Havre, in making freſh obſervations, which fully aſcertained the ſtate of the time-keepers. At laſt, with the new moon, we again attempted to get out, but met with the ſame obſtacles as before, and were very near being detained twelve days longer. The want of water was our chief hindrance, ſo that we determined to lighten the frigate, and by that means we got her out of the harbour, and clear of the mole of Havre on the 13th of June, at ſeven in the morning. We were obliged to anchor in the road till evening,

to bring off our guns and ſtores which had been taken out. At ſeven we weighed anchor, and ſailed with a wind that was not very favorable.

We found it almoſt as difficult to get out of the channel as out of the harbour. For ſix days we did nothing but tack about from the French to the Engliſh coaſt. The very next day after our departure, the ſea growing ſomewhat rough, the freſh ſailors ſoon felt the effects of its motion. My ſickneſs happily went off in twenty-four hours.

During theſe firſt days of our voyage, I made trial of a new lock invented by Mr. Vallois. Before I left Havre, I had orders from the duke de Praſlin to add the experiment of this machine to that of the time-keepers. Theſe experiments did not laſt long; the ſecond time I tried this machine, the main-piece broke off, and

and was loſt in the ſea [22]; I then ſubſtituted a ſecond, which I had taken in caſe of need; this again underwent the ſame fate. Theſe two accidents made it impoſſible for me to purſue theſe experiments; which were too few to afford any other concluſion than this, that the firſt

[23] This lock conſiſts of two pieces: the one is a hollow cylinder or roll made of tin, eight or ten inches in diameter: within, are four tin wings or ſlanting ſheets, ſupported by an axis longer than the cylinder: the ſecond piece is a ſquare box, in which is encloſed the wheel-work that puts the needles in motion on a divided dial.

This box is fixed on board the ſhip: you take a chain made either of rope or braſs wire, and faſten one end to the wheel-work, and the other to the axis of the cylinder; this done, you throw the cylinder into the ſea. As the ſhip draws the cylinder after her, the preſſure of the water upon the inſide wings, impels them with a degree of velocity proportionable to the ſwiftneſs of her ſailing. This rotation of the cylinder communicates the like motion to the wheel-work, by means of the chain which unites them, and the needles being thus ſet a going, ſhew upon the dial,

firſt thing the inventor ſhould have attended to, was, to give a ſufficient degree of ſolidity to the ſeveral parts of his lock, to reſiſt the impetuoſity of the waves.

The trial of the machines relative to the aſcertaining of longitudes, was not the ſole object of our voyage; the duke de Praſlin had found means to adapt it to ſeveral purpoſes very uſeful to the navy. Beſide the experiments on the *watches*, and the *lock*, we made trial of the *lozenges* for making broth for the ſick, and of the *ſea-water* ſweetened after Mr. Poiſſonier's method. For my own part, I made uſe of no other water till we reached Cadiz, where the ſea-coal failed us. This trial, together with thoſe already made in ſeveral long voyages, demonſtrates the

ſpaces calculated by the revolutions of the cylinder; whence, by means of a table, you aſcertain the way the ſhip has made. When I made the experiment, it was the cylinder that came off.

whole-

wholeſomeneſs of this water, and confirms the judgment paſſed by the academy.

It was not till after ſix days ſailing, that we judged we were clear of the channel. We had no room to complain of this ſea, which is ſometimes very rough. It is true we were in the beſt ſeaſon of the year, ſo that we had only the winds againſt us, but this is a ſad obſtacle, for nothing is ſo irkſome as to be perpetually driven back from the track you want to purſue. We were ſailing weſtward at a ſeaſon when the winds generally blow from that quarter, yet, notwithſtanding their obſtinate oppoſition, in twenty-eight days we reached the eaſtern ſkirts of the bank of Newfoundland, commonly called the Great Bank. On the 9th of July we perceived by a miſt that we were drawing near to that dreary coaſt. It roſe in the morning: whilſt it remained thin,

the weather was very hot; at noon Reaumur's thermometer was at twenty-one degrees, the higheſt it had yet ſhewn; about one o'clock the fog thickened, the air grew cooler, and by three, the ſame thermometer was come down to thirteen degrees above O. The winds became very favorable, and drove us apace in a good track. This ſingular advantage did not laſt long, for at midnight the wind fell, and we had a dead calm till noon the next day, July 10.

As we deemed that we were very near the bank, we had kept ſounding for ſeveral days paſt. At laſt on the 11th of July, at half paſt five in the evening, we ſounded, and found eighty-four fathom. Whilſt they were ſounding, one of our ſailors caſt a line at a venture; it was hardly down before it caught a cod. The fiſh and the plummet came up almoſt at the

the ſame time, and both confirmed our arrival at the bank [24].

The bank of Newfoundland is famous for the quantity of cod that it affords, and for the fiſhery that is annually carried on there by the Engliſh and French, who are ſole poſſeſſors of that branch of trade in thoſe parts. This ſand bank extends from the 41ſt degree of latitude to about 49½, and its greateſt breadth may be about 80 leagues [25]. Cod is generally found through-

[24] No cod is to be found in open ſea; they always keep in the ſhallows.

[25] From about 49½ deg. of latitude to the eaſtward of Newfoundland, quite to the coaſt of New England, you find a ſucceſſion of ſand banks. That of Newfoundland, ſo called from the neighbouring iſland, is the largeſt of all, and indeed larger than any ſand-bank that we know of, whether in the ocean, or in any other ſeas; it is therefore juſtly called the great bank. It is 80 leagues wide in the broadeſt part. However, the limits cannot be perfectly exact; for it is no eaſy matter to delineate a ſand-bank upon a map, eſpecially in a latitude where the ſky will admit of taking obſervations.

out this immenſe extent, but the fiſhermen obſerve that the greateſt plenty is commonly about that part of the bank which lies between the forty-third and forty-ſixth degrees, eſpecially towards the eaſtern ſhore. The veſſels deſtined for this fiſhery ſail from France from the end of February to the end of April. Happy thoſe however who can get there by the middle of April. From that time till about the 15th of June, the fiſhery is moſt plentiful; after that, the capelans [26] going to depoſit their eggs along the ſeveral coaſts of Newfoundland, draw away the cod, which, purſuing after them, forſake the Great Bank, till the middle of September, when, ſtill greedy after their prey, they are brought back to it by the ſame fiſh, which now forſakes the ſhore, and returns

[26] The capelan is a ſmall fiſh, about the ſize of a pilchard, but ſomewhat rounder and narrower. The cod devours it greedily.

to

to the ocean. The fiſhery again yields almoſt as much in September and October, as it did in May and June. Many ſhips conſequently go twice a year to the Great Bank, and employ the interval when the cod is gone to the coaſts, in returning to France to diſpoſe of their cargo, and recruit their proviſions and ſalt. Few ſhips indeed, except thoſe from Olonne [27], go twice a year to Newfoundland; the reſt are ſtationed there for ſix or ſeven months together, and never come home till they begin to be in want of proviſions, unleſs they have made a ſpeedy and plentiful capture, which is ſeldom the caſe. The fiſhermen all complain that the fiſhery grows worſe and worſe. Before, and after the war of 1744, prodigious ſhoals of cod flocked to the bank of Newfoundland,

[27] The principal ports in France where veſſels are fitted out for the cod fiſhery are, Saint Maloes, Granville, Honfleur, Saint Jean de Luz, Olonne, and Bayonne.

and made the fortune of fiſhermen and privateers; but ſince the laſt peace, the produce of the fiſhery is reduced to one third of what it was before; doubtleſs becauſe the bait of a ſmall fortune has increaſed the number of veſſels, and proportionably divided the profit.

The cod that is caught on the bank of Newfoundland, is that which is known in France by the name of green or freſh cod. It is ſalted on board the ſhip as ſoon as caught, and keeps in ſalt the whole fiſhing ſeaſon, and till they return to France. The curing and ſalting of the cod, requires a great deal of care. The following is the method of curing and ſalting of the green cod.

As ſoon as the fiſherman has caught a fiſh with his line, he pulls out its tongue, and gives the fiſh to another man, whom they call the *beheader*. This man, with a two-edged knife like a lancet, ſlits the fiſh

fiſh from the anus to the throat, which he cuts acroſs to the bones of the neck; he then lays down his knife, and pulls out the liver, which he drops into a kind of tray, through a little hole made on purpoſe in the ſcaffold he works upon; then he guts it and cuts off the head. This done, he delivers the fiſh to the next man who ſtands over againſt him. This man, who is called the ſlicer, takes hold of it by the left gill, and reſts its back againſt a board, a foot long and two inches high; he pricks it with the ſlicing knife on the left ſide of the anus, which makes it turn out the left gill; then he cuts the ribs or great bones all along the vertebræ, about half way down from the neck to the anus, he does the ſame on the right ſide, then cuts aſlant three joints of the vertebræ through to the ſpinal marrow; laſtly he cuts all along the vertebræ and ſpinal marrow, dividing them in two, and thus ends his operation.

A third helper then takes this fiſh, and with a kind of wooden ſpatule, he ſcrapes all the blood that has remained along the vertebræ that were not cut. When the cod is thus thoroughly cleanſed (ſometimes waſhed) he drops it into the hold, through a hole made for that purpoſe, and the *ſalter* is there ready to receive it.

He crams as much ſalt as he can into the belly of the fiſh, lays it down, the tail end loweſt, rubs the ſkin all over with ſalt, and even covers it with more ſalt; then goes through the ſame proceſs with the reſt of the cod, which he heaps one upon another till the whole is laid up. The fiſh thus ſalted and piled up in the hold, is never meddled with any more till it is brought home and unloaded for ſale.

It is difficult for one who never was there to form an idea of the life the fiſhermen live at the Great Bank. It muſt be as powerful

powerful a motive as the thirſt after gain, that can prevail upon thoſe poor wretches to ſpend ſix whole months between the ſky and the water, in a climate almoſt always excluded from the ſight of the ſun, and conſtantly breathing ſo thick a fog, that they can hardly ſee from one end of the ſhip to the other.

This gain is ſometimes very trifling, eſpecially now, ſince the ſcarcity of cod at the Great Bank. The ſalt fiſh landed at Bourdeaux, Rochelle, or Nantz, ſells dearer or cheaper, according to the plenty or ſcarcity of the capture, the time of its arrival, and the ſize of the fiſh. Thoſe who are ſo lucky as to bring in the firſt cod, may make three hundred and ſixty livres of the great hundred, which contains an hundred and twenty-four large fiſh. The ſecond may be worth two hundred and ſixty livres, but the laſt ſeldom fetches more

more than fifty crowns. So much for what concerns the owner. As to the profit of the fiſhing ſailors, it differs according to the cuſtoms of the port where the veſſel was fitted out. At Olonne, S. Jean de Luz, and Bayonne, the crew commonly come in for one third of the lading; in other places, as at Granville, they have but one fifth; but every ſailor, on his return, is entitled to a gratuity of one hundred to two hundred and forty livres, according to the dexterity he has ſhewn in fiſhing. Elſewhere, as at S. Maloes, the ſailors are hired for the whole ſeaſon, as high as four hundred livres per man. I do not think this a very good ſcheme for the owner; the fiſherman, ſure of his own profit, is leſs ſolicitous whether the fiſhery turns out good or bad, and conſequently leſs diligent.

The

The cod fiſhery, independent of its utility in trade, of which it is no inconſiderable branch, is an excellent nurſery for ſailors. It has been obſerved, that the ſeamen who have been employed in this navigation, are more expert, more able-bodied, and fitter to endure hardſhips than others.

The very next day after we reached the bank of Newfoundland, the fog and the calm overtook us; this is the weather that commonly prevails there [23]. As the

[23] At and about the Great Bank, theſe horrid fogs infeſt the air moſt part of the year, and will laſt eight or ten days ſucceſſively, ſometimes longer. In autumn and winter they are not ſo frequent; but from the middle part of ſpring till December, they are almoſt conſtant: they are ſo thick that one cannot ſee at ten fathom diſtance. An inceſſant rain drops from the ſails and rigging. The ſea is ſeldom rough about the Great Bank. The ſailors commonly aſk thoſe who come from the open ſea, "*How is the wea-*"*ther abroad*"?

calm

calm continued the whole day, we employed the time of this inaction, in fiſhing. The cod is caught with a harpoon fixed to a line; the beſt bait is that little fiſh mentioned above, which they call capelan; for want of this, they make uſe of the inteſtines of the cod itſelf. Though this fiſh is extremely voracious, it requires both cuſtom and ſkill to allure him. We caught no great quantity, and though we were ſo many, the fiſh always went to the ſame perſons, who were more dextrous, and conſequently more lucky than the reſt.

The fourteen days we ſpent from our arrival at the Bank to our landing, were one continued ſeries of fogs, which made us very uneaſy. The great number of ſhips that crowded about the Bank, kept us in continual apprehenſions of running foul of ſome of them in the fog. Beſides, having been for ſeveral days unable to obſerve

obſerve the latitude, we durſt not advance, for fear of ſtriking againſt the bars of Cape Raze [29]. Our charts placed us about the longitude of thoſe rocks, and the computed latitude brought us pretty near them. Theſe laſt days of our firſt run, were the worſt we had yet met with, and indeed the worſt of the whole voyage. Tranſplanted into a horrid climate, conſtantly choaked with fogs, we ſeemed to be forever excluded from the ſight of the ſun; nor could we hope to land, whilſt this fog intercepted the coaſt. It was dangerous to go in ſearch of the ſhore, even when the miſt ſeemed to be diſperſing. It is no uncommon thing in this latitude to ſee the fineſt clearing ſucceeded by a prodigious thick fog, and this within half an hour. Then the pilot repents

[29] Theſe are ſunken rocks, ſituated on the weſtern coaſt of the Great Bank, in 46 degrees 20 ſeconds latitude, and about 54 degrees longitude.

his

his having approached the land, miſled by the appearance of a clear ſky, eſpecially if he has not had time to take a ſurvey of it; how can he get clear if the wind is not very favorable? What track ſhall he purſue to eſcape running aground? Such are the inconveniencies and hazards of navigation in the latitudes we were then in; and we were not long before we experienced how critical our ſituation was.

We only waited for the inſtant when the weather ſhould clear up, to go and reconnoitre the land, from which we deemed we were not far diſtant. We thought we had at laſt attained the ſummit of our wiſhes. On the 22d of July, the fineſt ſky imaginable filled us with hope and joy. The horizon, though not quite ſo clear as we could have wiſhed, ſeemed nevertheleſs to promiſe a ſight of land at five or ſix leagues diſtance. Upon the

the ſtrength of this deluſive appearance, we run directly towards the landing place, with a briſk wind; but how great was our amazement, when, without diſcovering any land, we ſuddenly perceived, at a ſmall diſtance before us, the daſhing of the waters, which could only be occaſioned by the coaſt, or by rocks or breakers, which the fog concealed from our ſight. No time was to be loſt; we tacked about, and made all the ſail we could to get away from a coaſt where it is dangerous being wind-bound, on account of the violent currents, which may drive the veſſel aſhore, if ſhe has the misfortune to be becalmed [30]. Happily for us, the wind favored our flight, and

[30] The iſland of Newfoundland is ſurrounded with the moſt violent currents; they have no fixed direction, ſometimes driving towards the ſhore, ſometimes towards the main ſea. This uncertainty requires the greateſt caution.

we made for the Great Bank, there to wait till a leſs fallacious change of weather ſhould permit us to go ſafely in queſt of land.

This we had an opportunity of effecting two days after, by the fineſt weather imaginable. Nothing is more gloomy than the ſky darkened by that thick and damp fog, as nothing is more beautiful than that very ſky, when a north eaſt wind drives away the fog, and exhibits a well terminated horizon. The ſun was not yet riſen, when the miſt, which had been conſtant all the 23d, diſperſed in an inſtant; a clear ſky and a fair wind determined us to make directly for land. We ſet ſail at two in the morning, at eight we diſcovered a ſmall eminence riſing in the moſt diſtant horizon. At noon the figure of this and ſeveral other points which appeared as we drew nearer, made us conjecture that the land we ſaw

was

was the coaſt of Newfoundland, and that this firſt eminence was the *Red-hat*. However, we were ſtill too far off to judge with any certainty, but at four in the afternoon, being but four leagues diſtant, we plainly ſaw we were not miſtaken. The Red-hat, and in general the whole coaſt of Newfoundland, is very ſteep, and riſes far above the level of the ſea; we firſt diſcovered it at near ſixteen leagues diſtance. The ſhips that ſail in this latitude, commonly take notice of this mountain, its form being very diſtinguiſhable. It is ſaid there are ſome ſpots from whence it really appears like a flapped hat.

We had ſteered toward the Red-hat till noon, the winds not permitting us to bear more to the weſt, and after taking the elevation of it, we were actually going to tack about, to get more ſea room,

when the wind ſhifted by degrees, and we made towards the iſland of Saint Pierre, which we diſcovered at ſix. Our firſt intention was not to anchor there that day, but conſidering how ſeldom we could expect ſuch clear weather as we then enjoyed, we directed our courſe ſtraight to it. About eight o'clock, judging we were very near land, we fired a gun for a pilot; we were anſwered. We fired repeatedly to ſhew our impatience, nor was it ill grounded. The wind was ſlackening more and more, night was coming on, and the weather ſeemed to threaten a fog for the next day. Our ſignals were indeed anſwered, but the wiſhed-for pilot did not appear. We could plainly ſee the light of the guns that anſwered us, and by the interval between the light and the ſound, we eſtimated the diſtance of the iſland, and found

found to our ſorrow that we were farther from it than we had imagined. To complete our misfortune, a calm came on, and for ſome hours we were afraid of being driven aſhore by the currents; but the wind ſoon roſe. Seeing no pilot come, we kept aloof, firing a gun every half hour, and each time we were anſwered by two. Never did a night appear ſo long; the weather was overcaſt, and foretold an approaching fog. At three we begun to ſuſpect land, and about five we plainly diſtinguiſhed the iſland of *Saint Pierre*, and particularly another little adjacent iſland, called the *Pigeon-houſe*, which lies at the entrance of the road. Having attained to this certainty, we tacked about, and ſailed before the wind, ſteering for the Pigeon-houſe; we were ſtill near five leagues off, and the fog was coming on. We ſpied a little boat making towards us; at firſt we were in doubt

whether we had beſt wait for it, but finding we loſt ſight of the land more and more, we determined to lay by, in caſe it ſhould be the pilot. We were not diſappointed; it was the captain of the harbour of Saint Pierre, who had been rowing about the iſland all night, unable to find us. He leaped on board; and was ſo perfectly acquainted with the place, that he did not mind loſing ſight of the land, and in a ſhort time brought us ſafe to the entrance of the road. We had ſcarcely reached it, when the wind failed at once, and fell to a dead calm, ſo that we were obliged to anchor before the road of Saint Pierre, and then to tow the ſhip to the right anchorage. This laborious operation took us up from ſix in the morning till the next day July 26.

Thus after forty-two days ſailing we concluded what may be called a pretty good

good paſſage, ſometimes indeed obſtructed by the fogs and winds, but this was no more than what we were to expect at that time of the year. We had met with no accident, no ſqualls nor ſtorms, and had almoſt always a fine ſmooth ſea [31].

We were no ſooner come to an anchor at the entrance of the road of Saint Pierre, but a prodigious thick fog robbed us of the ſight of the land that ſurrounded us, and this for two days together. Indeed one muſt have been ſix weeks at ſea, to lament being deprived of ſuch a proſpect as the barren coaſts of this road affords, and in general the whole iſland of Saint Pierre; but for ſeamen tired with the uniform ſpectacle of the ſea, the moſt hideous rocks have their charms; I was

[31] Only on the 2d and 5th of July, when we met with a very rough ſea.

therefore heartily glad to get on ſhore. The very next day after our arrival, I ſkipped into a canoe with Mr. Tronjoly and ſome officers, and we made for the coaſt, through the miſt. Long before we reached the ſhore, an offenſive ſmell made us ſenſible what we were to expect. The ſtench increaſed as we drew nearer, and was at the height, when we landed near a kind of wooden houſe, which projects into the ſea, and is built upon piles. As our firſt buſineſs was to wait on the governor, we poſtponed our inquiries about this building and its uſe to another opportunity. We made the beſt of our way to the governor's houſe, through a field covered with nothing but white pebbles or flat ſtones, overſpread with an innumerable multitude of cod. Mr. Dangeac, governor of the iſland, came to meet us with his family. They welcomed us with ſuch

politeneſs,

politeneſs, and during our ſtay there, were ſo attentive and obliging, that we were ſoon convinced that the delights of an agreeable ſociety will compenſate for the hardſhips of the worſt of climates.

Mr. Dangeac was no ſooner apprized of the object of my miſſion, but he made it his whole ſtudy to procure me all neceſſary conveniencies for my operations. I was loaded with his favours, and the manner of conferring them doubled the obligation. He compelled me to accept of the houſe, and even of the apartment where his ſons lived. Accordingly I fixed my abode on the ſhore, with Meſſ. Leroy and Wallot; and the apparatus was ſet up, to be in readineſs for the firſt moment of fair weather. I was ſo prepoſſeſſed that the ſight of the ſun was an uncommon phænomenon in theſe parts, that I was almoſt diſcouraged; but happily for us, that

that was not the caſe while we remained on the iſland, for in ten days I had four which were fit for obſervations.

I ſpent the intervals between my aſtronomical obſervations, in ſurveying the iſland, and enquiring into the nature of the place, its inhabitants and trade.

The iſlands of Saint Pierre and Miquelon are the only ſettlements the French poſſeſs at preſent in this northern part of America, which includes Newfoundland and the coaſt of Canada.

Saint Pierre is a very ſmall iſland; its utmoſt length may be two leagues. Miquelon is ſomewhat larger, and may be about five leagues long. S. Pierre however is the chief place of the colony; the ſafety of its harbour draws a greater number of ſhips, and probably for this ſingle reaſon,

reaſon, the governor has fixed his reſidence there [32]; for I am told Miquelon is a much pleaſanter ſpot. They talk much of a fine plain, a kind of meadow, a league long, which makes a very pleaſant walk. You have no ſuch thing at Saint Pierre, where all is barren mountains, or rather craggy rocks, here and there covered with dry moſs, and other weeds, the ſad produce of a ſtony ſoil. I ſometimes penetrated far into the iſland to acquaint myſelf with the place, and examine its productions; all I found was mountains, not to be ſcaled without danger; the lit-

[32] The fiſhing veſſels are very ſafe in a pretty large *Barachois*, which anſwers the purpoſe of a harbour. What they call here *Barachois*, is a little pool near the ſea, and only ſeparated from it by a bank of pebbles. The road of Saint Pierre is a tolerable ſhelter for ſhips of burden, but care muſt be taken to examine the cables very often, otherwiſe they will ſoon be damaged by the ſtony bottom.

tle

tle vallies between them are no better; ſome are full of water, and form ſo many lakes; others are encumbered with little ſorry fir trees, and ſome few birch, the only trees that grow in this country, ſo far as I could find, nor did I ſee a ſingle tree more than twelve feet high in all that part of the iſland where I went. The iſland of Miquelon is a little better ſtored with wood.

The moſt common plant I met with at Saint Pierre, is a kind of tea; (at leaſt the inhabitants call it ſo) its leaf is woolly underneath, and it greatly reſembles our roſemary, both in the leaf and ſtalk. There is another plant they call anniſe; I have taſted both, infuſed in boiling water, and think the anniſe is the pleaſanter of the two.

Hence it appears how deſtitute the inhabitants muſt be of the neceſſaries of life,

in

in a country where no corn will grow, and where every the ſmalleſt article muſt be procured from France. They have fixed their dwellings in a little plain along the ſea coaſt; they have ſmall gardens, where, with much ado, they grow a few lettuces, that never come to perfection, but which they eat greedily when they are ſtill quite green.

The want of paſture will not admit of breeding much cattle; fowls are the only reſource as to meat. Their ſoups are commonly made with cods' heads, but I cannot commend them. If trade were open between this iſland and the coaſt of Newfoundland they would be in no want, but the Engliſh make a point to ſuffer no proviſions whatever to be carried over to Saint Pierre, and all intercourſe is ſtrictly prohibited between the iſland and the main land. If at any time ſome Engliſh

ſhip

ſhip finds means to convey a few head of oxen or other cattle, it is by eluding the vigilance of a number of veſſels of their own nation, ſtationed there merely to prevent this contraband trade. Our arrival at Saint Pierre was celebrated by the death of a bullock; this was the nobleſt reception they could beſtow.

From this account, one would be apt to conclude, that the iſland of Saint Pierre could only be conſidered as a ſhelter for fiſhermen driven thither by ſtreſs of weather, yet we have made a ſettlement there. The iſlands of Saint Pierre and Miquelon were ceded to France by the Engliſh on the following conditions: "that no forts ſhould be built on either; that no more than fifty men of regular troops ſhould be kept there, diſperſed on both iſlands; and that they ſhould have no military ſtores, or cannon, capable of making a defence." Accordingly they are allowed

but

but five or ſix ſmall pieces of cannon, which are rolled to the water-ſide without carriages, and are only uſed for ſignals to the ſhips that want to come in. France, at the taking poſſeſſion of theſe iſlands, appointed a governor. Such of the Canadians as did not chuſe to become Britiſh were permitted to go and ſettle there; many went at firſt, but the difficulty of ſubſiſting in ſuch a barren country, ſoon determined them to quit it; the greateſt part deſired leave to remove to France; it was granted, but they were no ſooner there, than they regretted the iſland of Saint Pierre and wanted to go back. A cargo of near three hundred arrived there juſt before us. Their unexpected return put the colony in ſome confuſion; thoſe who were left behind had ſeized upon the habitations which the others had forſaken; they had pulled down ſome of the wooden houſes, and made

made uſe of the materials. The new comers were ſent to Miquelon, which, with this addition, may contain five or ſix hundred inhabitants; Saint Pierre about half as many.

I obſerved above, ſpeaking of the Newfoundland fiſhery, that towards the latter end of June, the *capelan* flocked from the main to depoſit their eggs along the coaſt of that and the adjacent iſlands; and that then all the cod about the Great Bank came in ſhoals to theſe coaſts: this is the critical time for the fiſhermen of Saint Pierre. The iſland is adjoining to a ſand bank where the cod comes in great plenty. Whatever is caught there, is brought to Saint Pierre, where it is cured and dried. This is what is ſold in France by the name of *morue ſeche*, or more properly *merluche*. *Merluche* or *morue fraiche* is therefore one and the ſame fiſh, only cured in a different manner.

Some

Some ſhips likewiſe bring the fiſh they have caught at the Great Bank, to dry at Saint Pierre, but theſe are few; moſt of the cod that is fiſhed at the Bank, is brought home to Europe, and ſold for *morue verte*, or barrel cod.

Immenſe labour and care are requiſite for this operation of ſalting and drying the cod, though but an ordinary diſh at laſt.

The manner of preparing and drying cod.

The cod intended for drying, is caught and beheaded in the ſame manner as the other, but it is cut up differently *. The *ſlicer*, inſtead of cutting the bones along the vertebræ only half way down from the throat to the anus, lays open the fiſh at one ſtroke, quite to the tail, all along the vertebræ, which he divides up to the throat, leaving each half of theſe vertebræ

* P. 120, &c.

and the ſpinal marrow in the fleſh of the cod.

When the *ſlicer* has thus diſpatched a fiſh, he drops it into a ſledge that holds about half a hundred weight; a boy then drives the ſledge to the place where the *ſalter* ſalts and ſpreads the fiſh of the day.

The *ſalter* lays down the fiſh flat with the fleſh uppermoſt, and placing ſeveral of them ſide by ſide, he forms a layer of ſix, eight, twelve, or fifteen feet long, and three, four, or five broad; then he takes a great wooden ſhovel, about two feet ſquare, and ſprinkles ſalt all over the layer of cod. Care muſt be taken that this ſalt be laid on very even. When this layer is ſufficiently ſalted, he ſpreads another over it, ſalts it in the ſame manner, and ſo on.

When

When there are large, middling, and ſmall cod, they are kept apart, for a different depth of ſalt is requiſite for different ſizes. Too much ſalt burns up the fiſh, and makes it brittle when it comes to dry, and too little makes it greaſy, and difficult to dry.

The cod is left in ſalt two days at leaſt, and ſometimes above a fortnight; then it is waſhed. For this purpoſe they load it on hand barrows, and empty it out into a laver not unlike a great cage, by the ſea-ſide; there they ſtir it about in ſea-water with paddles, to cleanſe it from the ſalt and ſlime that it is daubed with, and when it is waſhed white, they put it again on the barrows, and carry it upon the gravel where it is to be ſpread. They firſt pile it up five or ſix feet high; the top of the heap terminates like a roof, that the fiſh may drain and harden.

Two, three, or four days after, as the weather permits, they undo the pile, and ſpread the fiſh upon the gravel one by one in rows, with the fleſh uppermoſt. When it has lain thus in the morning ſun, they turn it about two in the afternoon, the ſkin uppermoſt, and in the evening if they find that the wind and ſun have dried them enough, they lay five or ſix of them one upon another, and a large one at top, to ſhelter them from the rain. The cod being thus diſpoſed in little heaps, the ſkin upwards, they wait for the firſt fine day to ſpread them again on the gravel, firſt with the ſkin uppermoſt, and at noon they turn them, and when they have been thus expoſed a ſecond time to the rays of the ſun, they are again heaped up, fifteen or twenty in a heap, and left till the next fine day, when they once more ſpread them upon the gravel. If after this they find the fiſh thoroughly dry, they place the ſmall ones in round ſharp piles like

like pigeon-houſes, the middle ſized in heaps of a hundred weight, and the large ones in ſmaller parcels. The former, when they have undergone a fourth ſunning, that is, when they have been ſpread upon the gravel for the fourth time, are laid up in round piles; as to the larger ones, they muſt be ſpread in the ſun five or ſix times at leaſt, before one can venture to pile them up like the others. When they have ſtood ſo for three or four days, they ſpread them all at once upon the gravel in the ſun, and then proceed to a new pile, laying the largeſt fiſh for the ground-work, the middle ſized next, and the ſmalleſt at top; becauſe the larger they are, the greater preſſure they require, to ſqueeze out and throw off their moiſture. This pile is left ſtanding for a fortnight, and then the cod is again ſpread in the ſun, after which the pile is erected once more, but reverſed, ſo that what was at the bottom is now put at the top.

This pile may be let alone for a month, after which time the fiſh is once more expoſed to the ſun, and then piled up for the laſt time.

When all this is done, they make choice of a fine day to ſpread out theſe fiſhes, only an arm full at a time, and lay them on the gravel: they examine them one by one, and lay apart thoſe that ſtill retain ſome moiſture; the dry ones are piled up, and the moiſt ones are dried again in the ſun, and then put on the top of the other piles, that they may be at hand to be looked after, and dried again if they ſhould want it. To conclude, the whole proceſs, juſt before they are ſhipped, they ſpread them by arms full upon the gravel, to air and dry them thoroughly.

In order to ſhip this cod, they clean out the hold, and lay a kind of floor, either of ſtone or wood, on which they place

place the fiſh, the firſt layer with the fleſh uppermoſt, and all the reſt with the ſkin uppermoſt. They dont fill the hold from one end to the other, without interruption, but raiſe ſeveral piles, both to keep the good and bad apart, and likewiſe to diſtinguiſh the different ſizes of the fiſh. The large ones make the groundwork of the cargo, the middle ſized come next, and the ſmall ones are laid at top. They line the bottom and ſides of the hold with ſmall twigs with their leaves on, but dried firſt for ſeveral days. The cod being thus laid up in the hold, they cover it with ſails, and never meddle with it more till they unload it for ſale in Europe.

For theſe particulars about the curing of cod in the Iſland of St. Pierre, I am beholden to M. de R**, lieutenant of a frigate, who is perfectly acquainted with theſe matters, having been for a long time employed in that buſineſs on the iſland.

Slitting, ſalting, and drying the cod, are three diſtinct operations, the laſt of which is ſometimes very tedious and difficult. The ſun is ſeldom ſeen at Saint Pierre, and the want of ſunſhine is the loſs of thouſands of cod, which rot in the damps and fogs.

On the right hand of the harbor or road, is a houſe built upon piles in the ſea; it is made of boards, and the roof of long poles interwoven; half this roof is covered with turf from one end to the other, and the remaining half is left open: they call this houſe a *chafaud*. This is the place where they ſlit and ſalt the cod. The floor conſiſts of long poles, placed ſo as to let the inteſtines of the fiſh drop down between them into the ſea. Half the roof is left open to let in the rain and freſh air, which carry off part of the naſtineſs and ſtench of the place, that

that would otherwiſe be intolerable, and the fiſh is cured in that part which is thatched.

The fiſhing boats that are commonly employed in catching cod about the iſland, and bringing it to this *chafaud*, are ſmall craft, with a ſquare ſail. The crew never exceeds two men, commonly attended by a dog, their faithful ſervant and companion. From their boat they ſhoot goelands and other ſea-birds, with which they make their ſoup. The dog ſwims and fetches the bird, without any interruption to his maſter's fiſhery.

The moſt common birds on the coaſts of Saint Pierre and Newfoundland are the *madre*, the *gode*, and the *calculo*. The eggs of the *madre* are white ſpeckled with black; thoſe of the *gode* are greeniſh ſpeckled with black, and thoſe of the

calcuco

calculo are brown with darker ſpots. Theſe eggs are larger than hen eggs, and yet the birds are not much bigger than pigeons.

Behind the *chafaud*, appear the maſts of ſhipping; theſe ſhew the ſituation of the *barachois*, where the fiſhing ſmacks are ſheltered. This *barachois* is large, and tolerably fenced from the winds. It reaches to the walls of the governor's houſe, and may be about three hundred furlongs wide in the broadeſt part. It meaſures four fathom water till within twenty-five or thirty furlongs of the ſhore; however, it has ſome ſhallows where there is not above eight feet water, which muſt be carefully attended to. At low water you have not above five or ſix feet water over the bar that parts the *barachois* from the road. In neap tides you have nine or ten feet, but in

in high tides, it riſes to fourteen feet. The tides are very irregular at Saint Pierre, from the variety of winds, and the different degrees of their vehemence; however, the ſpring tides are commonly at the new and full moon about eight o clock.

In going into the road of Saint Pierre by the eaſtern paſs, you muſt beware of two dangerous rocks, called the *black-rock* and *baſſe jaune*, the firſt ſituated eaſt, the other eaſt-ſouth-eaſt of the point of the iſle of Dogs, at about $\frac{1}{3}$ of a league diſtance: but they are only dangerous by night or in a fog; by day light you can plainly ſee the *black-rock* above water, and almoſt always the waves daſhing over the *baſſe jaune*.

The great road begins at the little rock Saint Pierre; a ſhip may ſafely ſail on either ſide of this rock, and will find anchorage

anchorage in any part of the road within thirty fathom of the ſhore; but leſt a ſide wind ſhould riſe, they commonly allow more room, and anchor at one third diſtance from the coaſt of Saint Pierre, and two thirds from that of the iſle of Dogs. As to the ſouth-eaſt paſs, where merchantmen commonly go in and out, it is much more difficult than the other, and is hardly practicable but for ſhips of two or three hundred tons burden at moſt. There would be depth enough at high water for frigates, but the paſs is very narrow, as is likewiſe the channel that leads to the good anchorage. The pilot muſt be cautious of the rocks that lye near the *barachois*, ſome points of which advance under water into the channel, but may be avoided by ſteering nearer the ſhore of the iſle of Dogs than that of Saint Pierre; he muſt likewiſe be careful to keep clear of the iſle of Maſſacre, and of the innermoſt point of the iſle of Dogs, where a

ſhip

ſhip might ſtrike if ſhe was to come too near.

The duke de Praſlin's intention was that we ſhould make no longer ſtay at Saint Pierre than was requiſite for the verifying of the time-keepers. The weather proved ſo favorable, that in a week's time, I had a ſufficient number of obſervations to anſwer my purpoſe. I ſoon informed Mr. Tronjoly that I had no farther need to detain him there. This news was received by every one with as much pleaſure as I felt in imparting it. We were all heartily ſick of this horrid country, and the expectation of that delightful climate we were going to, made us long to get there. I ſhall now briefly give the reſult of the obſervations I made in this firſt ſtation towards verifying the time-keepers.

Before

Before we got to the iſland of S. Pierre, I had ſome ſuſpicion that one of the clocks was a little out of order. The obſervations I made when aſhore, plainly ſhewed, that which I called the ſecond (from the date of its conſtruction) had actually undergone ſome variation in our paſſage. I thought it muſt be owing to the damps and fogs we had been expoſed to, at the very time when I firſt perceived that the clocks did not agree. Mr. Le Roy aſked my leave to open the clock, that he might the better find out the cauſe of this diſorder, which he was of opinion, muſt proceed from ſome friction, which was diſcernable by the ear, in the pieces of the machine. At firſt I would not conſent, but fearing leſt my refuſal ſhould deprive Mr. Le Roy of the ſureſt means of diſcovering the defects of his work, and amending what might be amiſs, I conſented to the opening of the clock, which was done in the preſence of Mr. Tronjoly, Mr. Wallot

and

and myſelf. Mr. Le Roy ſtopped the movement, examined it a while, and found nothing apparently amiſs; then, without touching it with any inſtrument but his fingers, he reſtored it to the ſame ſtate with regard to the other clocks, that it was in before he ſtopped it. Mr. Le Roy gave me in writing the demand he had made of my conſent to open and examine his time keeper, and I drew up a verbal proceſs of the whole tranſaction.

The diſagreeable impreſſion this diſorder of one clock had made upon my mind, was ſoon removed by obſerving the perfection of the other; not the leaſt alteration had happened, and with regard to the mean motion it was, within a few tierces, the ſame as at Havre de Grace. This is very ſurpriſing after ſixty days trial, and in ſuch fogs as we had been expoſed to [34].

We

[34] The verification I made on the iſland of Saint Pierre was not indeed abſolutely compleat, the

We ſet ſail the 3d of Auguſt, and got out of the road of S. Pierre at ſeven in the morning with a clear ſky; there had been a fog the day before, and that was the laſt we had to encounter. A fair wind ſoon carried us beyond the Bank of Newfoundland; we loſt the ſoundings Auguſt 9, to enter upon a finer climate. Clear weather, fair winds, a fine ſea; ſuch in few words is the hiſtory of our run from the iſland of Saint Pierre to Sallee, and makes any farther account needleſs. The melancholy inſpired by the fogs and contrary winds in our former paſſage, was now exchanged for joy and hope, the effect of fair weather and favorable winds. We were not long in ſearch of the coaſt of Africa, and came within

the longitude of this iſland not being exactly determined, but that equality of motion which I had obſerved in one of the clocks was a ſtrong prejudice in its favor, which has been confirmed by the ſequel.

ſoundings

ſoundings on the 26th of Auguſt at ſeven in the morning. The ſounding ſhewed we were not far from land, but a miſt raiſed by the heat, prevented our ſeeing the ſhore; it diſperſed at noon, and we then ſaw *New Marmora* at four leagues diſtance ſtraight before us. We kept along the coaſt declining ſouthward, to get near Sallee, which was now but five leagues off; but upon the moment of landing, we were ſtopt ſhort by contrary winds. We then anchored near the coaſt, and the next morning we weighed, and came to an anchor over againſt the town of Sallee, at the diſtance of about a league to the ſouth weſt, after a run of twenty-four days.

We foreſaw ſome difficulties in landing, on account of the ſand bank which lies acroſs the entrance of the harbour of Sallee, and durſt not venture in without a pilot from the place. A xebeque from

Provence lay at anchor long ſide of us; her captain came on board, and the informations he gave us as to the ſituation made us ſtill more cautious. The next day after our arrival, a boat of that country coming to bring goods on board his ſhip, Mr. Tronjoly ſent an officer in a canoe, to fetch one of the moors, that he might guide him into the harbour, and give him an opportunity of waiting on the Conſul, to get information about the country, and the manner in which we were to proceed. Mr. Tronjoly, chiefly attentive to the object of my miſſion, in which he took all the part it deſerved from a public ſpirited man, and eſpecially from a ſea officer, zealous of his profeſſion, enjoined this officer to enquire whether I might find accommodations for making obſervations on ſhore. The meſſenger ſet off, and we were impatient to ſatisfy our curioſity concerning a country that was ſo new to us. We long waited to

no

no purpoſe; two days paſſed, and no officer appeared, and we began to be uneaſy [35]; however, he returned the fourth day, and told us the only thing that had detained him was the bar, which is ſometimes impaſſable for four or even eight days together. As to what concerned me, Mr. Cheinier our conſul very obligingly offered me his houſe, but withal ſaid he would not anſwer for the impreſſion that the ſight of my inſtruments might make upon a reſtleſs and ſuperſtitious people. I could make no obſervations at Sallee without previouſly aſking leave of the governor; he was therefore to be informed of the object of theſe obſervations, and then he could grant nothing till he had acquainted the King of

[35] We were the firſt French King's ſhip that had entered the port of Sallee ſince the concluſion of a peace, which was not yet very firmly eſtabliſhed, with a people whoſe honeſty is rather precarious.

Morocco with it. All theſe preliminaries muſt take up ſome time, and we wiſhed to make but a very ſhort ſtay at Sallee; I was alſo apprehenſive that once landed, we might be detained too long by the bar, and waſte thoſe moments here, which would be very precious elſewhere [36]. All theſe conſiderations put together, determined me to leave the watches and my inſtruments on board the ſhip: we even came to a reſolution not to land at all, unleſs the bar ſhould be ſmooth enough to admit of our coming back the ſame, or at fartheſt the next day.

The bar being practicable, ſome of our company took a trip to the town, but I

[36] The longitude of Sallee is not perfectly known. I could only have verified the time-keepers with regard to the mean motion, as I did at Saint Pierre. I wiſhed therefore to get to Cadiz, where I was to verify them completely.

choſe

choſe to wait till Mr. Tronjoly went, and to go with him. Theſe firſt came back the next day; their quick return emboldened us to follow their example. Mr. Tronjoly, who wanted to ſpeak with the conſul, prepared to go on ſhore, and agreed to my attending him. Mr. Wallot was ſo obliging as to remain on board, to watch the time-keepers in my abſence jointly with Mr. Le Roy, who had been aſhore with the firſt company.

Mr. Tronjoly was impatiently expected by Mr. Cheinier the conſul, and the governor of Sallee. They met us on the ſea ſhore, ſurrounded with a great concourſe of Moors or Salletines, who were eagar to ſee us; they all ſhewed us tokens of friendſhip, and expreſſed by their geſtures that they were not ſorry to ſee us; they were even familiar, ſome taking us by the hand, others aſking us for

blanquilles[37]. The whole time we ſtaid in the town, the governor, to free us from their importunity, and for fear we ſhould be inſulted, gave us a guard whenever we went abroad. This man, with a ſtick in his hand, walked before us, and without much ceremony, drove off thoſe who ſtood in our way; but this precaution was perhaps needleſs. We found the Salletines much more civilized and leſs ſhy than we had imagined. We met with nothing but marks of friendſhip from the principal perſons of the place; as for the common people, none but the little children ran after us, and abuſed us in their own language, but this we diſregarded, for we did not underſtand them. The word theſe children repeated oftenеſt was *bomba*, by which they meant to upbraid us with

[37] Small coin, worth three ſols four deniers French money.

the

the bombs that the French had thrown into Sallee and Arache in their laſt expedition [38].

We were to ſtay at Sallee only the remainder of that day, and to ſet off early in the morning, that we might get out before the ſea breeze ſet in. We ſpent that ſhort time in viewing the town, and the new objects it preſented both as to the place and its inhabitants. We were not much the better for this curſory ſurvey, but the next morning, juſt as we were to ſet off, the ſea was ſo rough on the bar, that no pilot durſt venture over. This continued the two ſucceeding days, ſo that

[38] In 1765, in the month of June, the French bombarded Sallee and Arache, and burnt ſome Salletine Xebeques: this expedition occaſioned a truce, which was concluded in October the ſame year; and at laſt in June 1767, a peace was concluded between the kings of France and Morocco.

we were detained near four days without a poſſibility of getting at the ſhip. For my own part, I was comforted by the opportunity this gave me of examining things, of which I ſhould have had but a faint notion, had I ſtaid at Sallee but half a day.

The civilities we met with from the conſul, made us amends for the little intercourſe we could have with the Salletines; his kindneſs in procuring us a ſight of whatever might ſatisfy our curioſity, and giving us an account of what we had not time to ſee, made our ſtay at Sallee very entertaining and pleaſant.

The town of Sallee is ſituated on the weſtern coaſt of Africa, in 34 deg. 4 min. latitude [39], and 9 deg. 6 min. longitude. It

[39] I had it not in my power to verify this latitude: as to the longitude, I give it ſuch

It is one of the moſt conſiderable towns of the kingdom of Fez, under the dominion of the king of Morocco. A river called *Guerou* divides it from eaſt to weſt into two parts, diſtinguiſhed on the maps by the names of Old Sallee to the north, and New Sallee to the ſouth; but the latter is more properly called Rabath [40].

The mouth of the river Guerou forms a harbour for trading ſhips, between the two towns of Rabath and Sallee, but the entrance is difficult, on account of the famous bar, or ſand bank, that extends

ſuch as I was able to deduce by the time-keepers, from ſome particular obſervations taken on board the ſhip, in the road of Sallee.

[40] Probably this name of Rabath, given to the ſouth ſide of the town of Sallee, has induced ſome geographers to call the river *Rebeta*, inſtead of its right name *Guerou*.

all

all along the coaſt of Africa, and againſt which the ſea, beating with incredible violence, riſes in ſuch billows as are exceedingly dangerous to paſs. The bar of Sallee is the worſt of all. It requires next to a calm to make it paſſable; the leaſt gale from the ſea renders it difficult, and conſequently the favorable moments muſt be ſeized to get in or out of the harbour. The one is eaſier than the other; for, provided the ſea does not break too violently over the bar, you can eaſily get in, obſerving always to preſent the ſtern to the wave, which of itſelf will drive the ſhip into the harbour. It is eaſieſt getting in at high water, for then the waves are not ſo furious. But to get out of port, the beſt way is to endeavour to be beforehand with the ſea breeze, which may occaſion a ſwell, and then it is eaſy to conceive how difficult it muſt be to keep the veſſel upright, and to conquer

conquer five or ſix great billows that follow one another with vaſt rapidity; the firſt lifts up the ſhip, the next whirls her acroſs, and ſhe infallibly becomes the ſport of the others, which ſwallow her up, without a poſſibility of affording her the leaſt aſſiſtance. Some fatal inſtances have made the natives extremely circumſpect in paſſing this bar. I could almoſt tax them with being over cautious, if an exceſs of prudence was not excuſable in ſuch a caſe as this.

From this account of the bar of Sallee, it is evident that ſuch a local inconvenience muſt be very detrimental to trade. A merchant ſhip of ſome burden, that draws too much water to ſail into the harbour, muſt anchor on the open coaſt, where ſhe is not very ſafe, and may be compelled, by the ſhifting of the wind, to

forſake her ſtation [41]; ſo that much time is loſt before ſhe can take in her lading. If once the bar grows rough, all communication is cut off. The diſtance of the anchorage will hardly admit of two turns a day [42], and each of theſe is very expenſive, becauſe the Europeans chuſe to employ the natives and their boats, for fear of loſing their own [43]. The chief trade

[41] The north weſt winds are very dangerous; a ſhip muſt not ſtay till they blow hard, to weigh anchor and get ſea room. Towards the latter end of September and in October you have frequent guſts of ſoutherly wind, that oblige you to remove from the road. It is cuſtomary in the road of Sallee to caſt but one anchor, that the veſſel may remove with greater diſpatch in caſe of need; or elſe they only faſten with a grappling and a ſmall anchor for fear the bottom ſhould cut their cables

[42] The beſt anchorage is about three quarters of a league from the mouth of the river, to the north weſt, leaving the tower of Aſſan to the ſouth eaſt.

[43] The captain of a trading veſſel loſt his long boat and his ſloop on the bar of Arache, the next port to Sallee; and at Sallee, one of their own boats periſhed, and only a ſingle Moor eſcaped.

that

that can be carried on with the Salletines, is in oil, wool, honey, wax, and Morocco leather; they take nothing in exchange but warlike ſtores, ſuch as ammunition, great and ſmall guns, ſabres, &c. but they prefer money to all commodities, are very fond of getting it from abroad, and ſuffer none to go out [44].

The bar may indeed be of ſome ſervice to the people of the country, as it makes any approach to their coaſt extremely difficult; but then this very defence ſometimes turns againſt themſelves. We ſaw an inſtance of it during the fortnight we lay at anchor in the road of Sallee. A ſmall xebeque, unable to get into

[44] French money is not current at Sallee; the coin of the country conſiſts of gold ducats, worth 10 French livres; the ounce worth 13 ſols 4 deniers; the flus, 24 of which go to a blanquille; and the alaquais, of which 80 make but a blanquille.

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the harbour, the bar being then unpaſſable, came to an anchor not far from us. We ſaw her make many ſignals the whole day; at laſt we ſent ſome of our people on board, who found her to be a prize that a Sallee rover had taken from the Portugueze, and was ſending in with a party of his own crew. The poor wretches, having met with contrary winds, and not coming home ſo ſoon as they expected, had been for ſeveral days in want of proviſions, and eſpecially of water. They made ſignals for immediate aſſiſtance from land, but in vain. Some boats attempted to ſupply them, but there was no getting over the bar, and ſo it continued for four days ſucceſſively, that the wretched crew muſt probably have periſhed for want, within ſight of the harbour, if we had not been at hand to aſſiſt them with all they wanted. Excepting

cepting this bar, there is nothing remarkable in the harbour of Sallee.

During my ſtay aſhore, I reſided at Rabath. I was told there was nothing worth ſeeing at Old Sallee, which is only inhabited by the lower ſort, ſo that I had no curioſity to go thither. What I am going to ſay of Rabath, may however be applied to both towns, which I ſhall frequently comprehend under one and the ſame name.

The houſes in Sallee are flat on the top; they ſeldom exceed a ground floor, and have no windows, or any light but from the door of each room; no ornaments either within or without, except in the houſes of the foreign conſuls; theſe have both windows and furniture. The Moors ſit on the ground, and have no other carpets than mats, or cuſhions that they call *eſtourmis*.

There

There are two principal ſtreets in Rabath, which are tolerably wide; theſe are the trading ſtreets. The market is kept in one of them; there the country people bring all the neceſſaries of life. The ſtreet is lined with ſhops for different commodities and trades. The other ſtreet is almoſt all inhabited by ſhoemakers, who make what they call *babouches*; theſe are no other than ſlippers, and is all the Moors wear when they do not go barefooted. This ſtreet is covered all acroſs with a platform made of hurdles, or boughs of trees, to ſhelter the workmen from the ſun, which otherwiſe would annoy them in their open ſhops. All the other ſtreets are very narrow. The quantities of oil made at Sallee[45], together with the naſtineſs of the houſes and their inhabitants, cauſe a very offenſive ſmell all over the town. In ge-

[45] They make oil with olives, but this is only for exportation; what they uſe at home is drawn from the *argan* nut.

neral,

neral, the whole makes a very mean and wretched appearance.

The town is ſurrounded with a long range of walls, pierced with ſeveral entrances, each guarded by a particular kind of centry, who has no other mark of diſtinction than a ſtaff in his hand. The walls are very high, but not the more ſolid. At ſome diſtances they are ſupported by ſquare projecting towers. Of this whole circumference, which is pretty large, ſome parts are mouldering away, ſome look threatening, and the ſoundeſt part would hardly withſtand a broadſide.

The burying places are encloſed between the city walls and the ſea; theſe take up a great deal of room, as the ſuperſtitious Moors never bury two bodies in the ſame place, leſt they ſhould diſturb the aſhes of their fathers; and to

prevent ſo criminal an indiſcretion, they mark every grave with a ſtone, as a warning to beware of digging on that ſpot. In conſequence of this cuſtom, all along the water ſide without the town, you ſee large fields ſtuck with theſe marks, which, at a diſtance, look like ſugar canes, or ſome other productions of the country; and the more ſo, as the fields that feed the living appear more bare than thoſe that encloſe the dead.

The moſt curious things in theſe burying grounds, are ſome little ſquare pavilions, about fifteen feet high, topt with a little dome, or with a very flat cap; the whole is white waſhed, which gives it the appearance of ſome place of note, eſpecially when ſeen from the road at ſea, where they attract the notice of ſtrangers. Theſe places are held in veneration by the people of the country. Each of theſe

pavilions

pavilions is the tomb of ſome ſaint, to whoſe folly, devotion and blind ſuperſtition have erected a palace in the realms of death. I ſhall ſpeak hereafter of this kind of ſaints.

I wiſh I could have given a deſcription of the moſques of Sallee, but it was not in my power to get any information concerning them, either by my own inſpection, or the account of others. I do not ſuſpect the Moors of being ingenious enough to have decorated the inſide of theſe edifices in a very elegant manner.

To complete this account of Sallee as far as I am able, conſidering the ſhort ſtay we made there, I ſhall here ſubjoin, that the tower of Aſſan is within half a quarter of a league of the town of Rabath, by the river ſide. It is thought to have been built by the Portugueze. Its

height may be about an hundred feet. It is about forty-ſix feet ſquare on the outſide. You aſcend to the top of this tower by ſuch an eaſy flight of ſteps, that it would be no hard matter to go up on horſeback. The brick arches that ſupport theſe ſtairs, begin to yield to the injuries of time, and the upper ones are almoſt all fallen in. The walls are built with very fine ſtone, and are ſeven feet thick. Within theſe walls is another ſquare, containing one room in every ſtory, each of which has an opening that looks out upon the ſtairs. I ſhould have taken theſe rooms for priſons, had I not obſerved in one of them ſome remains of paintings a freſco, in the manner of mouldings. The Moors make no uſe of this tower, nor have they any notion what it may have been intended for in former times.

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The tower of Aſſan is ſituated at the end of a ſpacious piece of ground, encompaſſed with walls, but only the ruins of them now remain; it was probably the place where ſome palace or temple formerly ſtood, for the remains of ſeveral rows of pillars are ſtill viſible, ſome of which are partly ſtanding. I was deſired to take notice of the ſtone theſe pillars are made of; this ſtone, they told me, was taken from the water ſide, where it is ſo ſoft, that you may cut it with a knife, ſo long as it is waſhed by the ſea water, but when expoſed to the dry air, it grows exceeding hard, and is excellent for building. The tower of Aſſan is the only antiquity obſervable in the neighbourhood of Sallee.

Below the tower of Aſſan, is a round tower, lower than the former, and pierced with ſeveral port holes; behind this tower ſtands the old citadel, of which it makes a

part. This citadel is rather a heap of ruins than a fortreſs, yet any but the Moors might make ſomething of it. Its ſituation, juſt at the entrance of the harbour, is very advantageous, its extent conſiderable, for it would lodge four thouſand men with eaſe. This citadel was built by the Portugueze; it is falling to decay, and the Salletines are too lazy to repair it. They have planted ſome cannon on the tottering walls, which crumble now and then, and bring down both carriages and batteries along with them; you ſee the broken pieces lying among the rocks where they have rolled down, and no body takes the pains to pick them up.

To the right of the tower of Aſſan, ſtands a pretty high turret; this is a moſque, and the pavilion on the top ſerves to give notice of the hours of prayer. Below this moſque there is a battery of twenty-

twenty-two pieces of cannon, in better order than that of the citadel; and laſtly by the water ſide, a new one of fourteen guns, almoſt cloſe to the ground. This is the only one to be feared on that ſide. A good way from this battery, on the right, and by the ſea ſide, is a ſmall fort, defended by three or four guns; the vicinity of the ſea has been fatal to it; for whether by a ſtorm, or as ſome ſay by an earthquake, the rock on which it is built was ſplit, and the walls ſeparated. The rocks at the foot of this fort form a little creek, by means of which it is ſometimes poſſible to have a communication with the land, when the bar makes the entrance into the harbour impracticable; but this is not to be hazarded without great caution. I took notice, as I went along, that out of fifty guns which make up the whole defence of the town of Sallee, not above twenty are fit for ſervice. They

are placed at random, without any regard to their different ſizes, and mounted on ſuch ſorry carriages, that they would infallibly be ſhaken to pieces, if the guns were fired often.

Between the city walls and the ſea ſhore, you ſee little pavilions ſcattered about; theſe are the tombs of holy muſſelmen, and the ground between them is full of land marks, that point out the graves of private perſons.

There is nothing remarkable on the ſide of the river, but a little turret, which is alſo a moſque, and a handſome new battery of twenty-two guns, erected by the ſea ſide.

Without the town are the gardens, lands and poſſeſſions of the inhabitants. The gardens are very extenſive, for this plain

plain reaſon, the land is the property of the firſt occupier; each takes as much ground as he thinks he wants and can till; if he grows tired of it, he forſakes it, and goes and ſows in the next field, if no body has been beforehand with him. In general, there is no ſuch thing as abſolute property, all the land belongs to the Emperor; but in this ſtate of poverty and general want of land, every one thinks he has a right to ſeize upon the monarch's property, as long as his majeſty is pleaſed to make no uſe of it, nor to claim it, which happens ſometimes, when a favorable opportunity offers, and a piece of ground has been improved by the labour and induſtry of the ſubject. The greateſt ornament and riches of theſe gardens, conſiſt in great plenty of orange, lemon and cedras trees; they likewiſe produce large quantities of pomegranates and figs. Theſe trees are planted as in a nurſery; and, without

without any art, form pleaſant groves, where you breathe a cool and fragrant air. Theſe gardens likewiſe abound with water melons, calabaſhes, meringens, tomatoes, and other productions peculiar to hot climates. The orange tree thrives beſt in a hot ſun, which alone can bring its fruit to perfect maturity; however, it requires watering, and water is ſcarce in Africa, as ſometimes it does not rain for ſix months together; therefore, in the higheſt part of every garden, there is a well, out of which the water is raiſed through a ſtring of earthen pots, which move up and down by means of a wheel that turns a mill-ſtone. The water is thus conveyed into a reſervoir, from which iſſue ſeveral pipes, which, ſlanting downwards, are ſo contrived as to diſperſe it all over the garden, through ſimple drains under ground, each of them terminating at the foot of an orange tree. The oranges, lemons, cedras,

dras, and every kind of fruit and vegetable that grows about Sallee are excellent; in ſhort, I know of nothing that is wanting in the ſoil, but the induſtry of the huſbandman, who may be rewarded beyond his labour. It would be a great miſtake to imagine that Africa, and its burning ſoil, muſt be but a vaſt track of barren and dry ground, unfit for vegetation. The interior parts indeed, by the account of travellers, are an immenſe extent of deſerts and burning ſands, but it is well known that the parts bordering on the ſea are very fertile. A good will, and induſtry, are what the Moors are wanting in, and hence partly proceeds that air of drought and barrenneſs which prevails throughout their country.

The kingdom of Fez is one of the moſt fertile cantons of Africa, yet half the country lies fallow. Half a league beyond Sallee, it is almoſt a deſert. Nothing is

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to be ſeen but immenſe and naked plains, unadorned with a ſingle plantation; not one tree is to be met with on the roads that lead from one town to another, and the weary traveller finds no ſhelter from the ſcorching ſun. He muſt carry tents along with him to ſcreen him from the inclemency of the weather by night, and alſo the proviſions neceſſary to ſuſtain life; for he may travel through a vaſt tract without meeting one ſingle Moor. Theſe people, except in towns, do not live in houſes; they have no fixt habitations; ever wandering about the country, they remove ſometimes one way, ſometimes another, live in tents, and with their families form themſelves into little ſocieties, or moveable villages, which they call *adouarres*. Thoſe who thus inhabit the deſerts, are half ſavages, make as it were a ſeparate nation, and have little or no intercourſe with the inhabitants of towns.

The

The inhabitants of Sallee may be divided into four claſſes; the true Moors, the Negroes, the Jews, and the Renegadoes.

The Moors are ſubjects of the King of Morocco, born in the religion of Mahomet. The Negroes are natives of the ſouthern and middle parts of Africa, ſavages who have been made ſlaves by the Moors.

The Jews are that wandering people, ſo well known by their calamities, deſpiſed of all nations, never able to form one of their own, and deteſted by the very Moors, notwithſtanding many conformities in their outward worſhip; but ſuch is the fatality of their lot, that I verily believe a Jew is more deſpiſed and abhorred by the Moors than a Chriſtian. Nevertheleſs, there are almoſt as many Jews as Moors in Sallee, and notwithſtanding the contempt

contempt with which they are treated, they go on exerciſing their talent of cheating; but they muſt be very cautious, for the leaſt miſdemeanor, if detected, would coſt them a baſtinado. If a Jew happens to ſtand in the way of a Moor, the latter will ſtrike him with his fiſt, or hit him a ſlap on the face, and the poor wretch has no right to reſent the affront as it deſerves. A Jew who ſtrikes a Moor has his hand cut off without any trial; if he had a complaint againſt the Moor, he might have carried it before the governor: it is true he would have ſtood but a poor chance at that tribunal. The Jews are not allowed to ſet their feet in the burial places. By way of diſtinction they wear a cap and a black garment; black is the colour to which the Moors have the greateſt averſion.

The Renegadoes are Chriſtians of different nations, who have embraced the religion

gion of Mahomet from various motives of intereſt; ſome having fallen into the hands of the Moors, have abjured Chriſtianity to eſcape the miſeries of ſlavery; others from lazineſs and a love of plunder, have been induced to aſſociate with a people noted for both. Theſe Renegadoes are for the moſt part worthleſs perſons, who having rendered themſelves obnoxious to the laws at home, found no ſafety but in flying into a country where they are out of reach. Theſe miſcreants are moſtly Italians and Spaniards; the Moors have ſenſe enough to deſpiſe them. I admired the anſwer of a Salletine, who had been long a priſoner on board the French gallies: We aſked him how he came not to turn Chriſtian; "a good Moor, ſaid he, can "never become a good Chriſtian, and a "good Chriſtian," (pointing contemptuouſly at one of theſe Renegadoes) "can "never make a good Moor." The Moors, however, are too happy in having theſe

Renegadoes

Renegadoes among them; it is of them they have learnt the little they know of ſhip building and navigation. Some of theſe Renegadoes are ſo baſe as to command Sallee rovers, and go a cruiſing againſt their own nation, and bring away their countrymen, loaded with chains, to deliver them up to the worſt of ſlavery: but whatever obligations the Moors may be under to theſe apoſtates, they value them no more than they deſerve, and will not acknowledge them as Moors; they never call them but by the opprobrious name of Renegadoes.

The uſual dreſs of the Salletines conſiſts of a long narrow piece of white ſtuff, which they call *eckque*. The men and the women wrap it round their body in a different manner. Moſt of the men wear it only round their waiſt, and leave their arms, ſhoulders, and legs, bare. This white

white habit makes the Moors look like ſo many ſtatues; thoſe who are employed in any work that requires freedom of motion, wear no eckque, but a waiſtcoat without ſleeves, and large trowſers, that reach from above the waiſt down to the ankles. The Moors all wear the Turkiſh turban, which is a kind of white handkerchief, twiſted, and bound round and round their forehead; the top of the head is covered with a red cap or caul. They let their beards grow, but cut off their hair: the women however wear their hair.

The women wear the eckque, as well as the men; they wrap themſelves up in it from head to foot. They are not allowed to ſhew their faces when they go abroad; an opening or two are contrived in the ſtuff, or in the folds of the eckque,

through which they enjoy the benefit of ſeeing every thing, without the pleaſure of being ſeen, which is no ſmall denial to the ſex. The huſbands are exceſſively jealous; their wives are always ſhut up within doors, and are not ſuffered to ſpeak with any man but their near relations; you ſeldom meet any in the ſtreets of Sallee, except a little before ſun-ſet, when they ſometimes go to pray in the burying grounds, but then they are ſo well wrapped up, that you cannot poſſibly ſee any thing but two large eyes, which rather excite than gratify your curioſity. The freedom of the Jewiſh women is quite a contraſt to the perpetual captivity of the Mooriſh wives. They wear no eckque, and go with their faces uncovered. This only relates to the common dreſs of the Salletines; I ſaw no other worn, except by the Governor. The day he received us in form, he was not in his mandrilla, but

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in the right Turkiſh dreſs. As for the women, they are ſo little ſeen, that I had no opportunity of obſerving what other clothing they may wear under the eckque.

The police of the town is in the hands of the Governor; who is at once magiſtrate, judge, and ſometimes executioner. In the morning he goes to the fleſh market, which is kept by the river ſide. Whoever has a bullock to diſpoſe of, brings it to this place, kills it, cuts off the beſt piece, and carries it to the Governor, who upon the apparent goodneſs of the meat, determines at once how many pounds the dealer ſhall ſell for a blanquille. The reſt of the day, the Governor rides about the town, mounted on a mule, and followed by a ſervant armed with a ſtick. If he meets with any one that is guilty of a treſpaſs, he directly condemns him to a

certain number of ſtripes, as many as he thinks proper, and his ſervant is ordered to inflict them upon the ſpot with his ſtick, unleſs Mr. Governor chuſes to take that trouble himſelf, or if his arm be not too much tired with the buſineſs. The ſufferer can get no redreſs, there being no appeal to any ſupreme court of judicature, and it is taken for granted that what he ſuffered he had well deſerved. Capital crimes alone are reſerved for the cognizance of the Emperor. The principle this prince goes upon is to puniſh by the amputation of the offending member. The culprit is brought before him, the crime is laid open, ſentence is immediately paſſed, the executioner is any one who happens to have a knife about him. He performs the operation juſt as he pleaſes. It is eaſy to conceive what a poor wretch muſt ſuffer in the hands of ſuch a bungler, who with cutting, ſawing, and breaking,

at laſt gets the limb off, and applies no other dreſſing to the wound, than a little ſtreet dirt, and then pours melted roſin over it. I have been aſſured many ſurvive this operation.

There is no other tribunal but the Emperor's, no law but his will; he adviſes with no one; in ſhort, he exerciſes the moſt unlimited deſpotiſm. From this account we may eaſily gueſs what muſt be the conſequence of a government founded on caprice, injuſtice, and cruelty, and form a juſt idea of the Mooriſh nation; a people void of induſtry or true courage, lazy, profligate, ſtupid, ſuch as vile ſlaves muſt be expected to be.

It now remains to ſpeak to that article which ſtruck me moſt in the ſuperſtition of the Moors, it is that of their ſaints. If among the meaneſt of the vulgar there is

found ſome oddity, who either from natural defect or from affectation, has any thing whimſical or ridiculous in his behaviour, he is directly accounted a ſaint; all fall down before him, run to kiſs his hand, and beg his protection; all from him is reſpectable; they court his friendſhip, dread his anger; his enemy becomes the enemy of the people, and frequently the victim of blind ſuperſtition [46]. The crafty ſaint, who perhaps has put on the appearance of madneſs, only for the advantage he reaps from it, grows more extravagant and more holy than ever; he then becomes more powerful, and all his wants are ſupplied; they let him take whatever he has a fancy for, and kiſs the hand that robs them. It is aſtoniſhing how far the blindneſs of mankind will go,

[46] It would be in the power of one of theſe ſaints to cauſe any man to be ſtoned to death, who ſhould chance to diſpleaſe him.

and

and how great is the power of ſuperſtition, which can ſometimes make them ſo inconſiſtent with themſelves, and will ſilence their warmeſt feelings! Is it credible that the moſt heinous affront, reproach and injury that can be offered to a Moor, (whoſe ruling paſſion is the moſt furious jealouſy) ſhould be accounted by him a glory, a merit, an honor, when it is beſtowed by one of theſe ſaints, who deſire no better than to enjoy in this world the foretaſte of Mahomet's paradiſe. The following fact is poſitively aſſerted: A bride, with her huſband, and ſeveral perſons that had attended the wedding, were croſſing the river in a boat; one of theſe ſaints happened to croſs over with them; he took a fancy to the bride, his holineſs ſignified his will and pleaſure; it was heard with adoration; and the beatified bridegroom promoted his ſanctification, by covering the ſaint with his own cloak;

the company cried out, oh bleſſedneſs! oh felicity! and the Moor received the compliments of all preſent upon his preferment to this holy dignity. However, I am told the ſaints are not all ſo lucky as to acquire theſe extenſive privileges.

When a ſaint dies, they erect over his grave one of thoſe little pavilions mentioned above. I had the good fortune to ſee and ſpeak with one of theſe reputed ſaints, and perhaps I may be thought to overcharge the picture, but I really do not. The particular whim of this man was to imitate with his lips the exploſion of bombs and cannon. He went bellowing about the ſtreets all day long, and muttering like the ancient ſybils. As he entered the room where we were, he began to breathe his divine effluvia all over it, going into every corner to let off his bombs and great guns with his mouth; he then partook of

of ſome fruits and other eatables which we gave him, and I was aſſured it would have been no hard matter to have prevailed upon the ſaint to drink wine, but for the many foreigners, and ſtill more for the other Moors, who were preſent; although it is a capital crime in a Mahometan to taſte wine: but in all countries it is enough that a man thinks he has ſome connection with the deity, to allow himſelf many privileges.

The wind that blew hard at ſea, and kept us priſoners in Sallee for ſeveral days, abated at laſt, and ſuffered us to croſs the bar ſafely. We eagerly ſeized this moment, and once more got to our ſhip, fully reſolved not to hazard ſuch another delay. We were deſirous of going immediately to Cadiz: the length of our firſt voyage had greatly lowered our proviſions, ſo that we had no time to loſe.

We

We therefore got ready on the 10th of September, after lying at anchor fourteen days before Sallee. In vain did they endeavour to detain us; they made a ſignal from land the day before we ſet off; we ſent directly to enquire what was the meaning of this ſignal, but there was no getting aſhore; the bar was then unpaſſable, ſo we could get no information [47]. The next day, the wind being favorable, we thought it beſt not to miſs the opportunity, ſo we ſailed for Cadiz, where we arrived in four days, on the 13th of September, at ſeven in the evening.

As we had touched upon the coaſt of Africa, we were of courſe to perform qua-

[47] During our ſtay at Cadiz, we received a letter from Sallee, by which we learnt, that the meaning of this ſignal was, they wanted us to come aſhore, to receive a conſiderable preſent of proviſions and refreſhments, which the King of Morocco had ordered to be offered to us, upon his being informed of our arrival at Sallee.

rantine;

rantine; however, the phyſicians of health came and examined us, and as they found no ſick on board, we were allowed to come aſhore the very next day after our arrival. I waited on the Governor, to aſk his conſent, before I entered upon my operations; and then proceeded to the Marquis de la Victoria's to get leave to make my obſervations at the marine obſervatory, which was granted. Mr. Puyabry, the French conſul, was ſo obliging as to take upon him all the neceſſary formalities for entering my inſtruments and the clocks into the city; this was no eaſy matter. All the permiſſions obtained for that purpoſe could not exempt us from a ſtrict ſearch at the cuſtom houſe, and it was not till after many removals and much trouble, that my inſtruments were conveyed to the obſervatory. The clocks did not ſuffer the leaſt injury from all this ſhaking: indeed Mr. Le Roy bent his whole attention

tion that way; but it may ſafely be affirmed, from the trial they have undergone in this voyage, that theſe clocks are very eaſily carried about, and that, with a little attention, they are not liable to ſtop or be diſcompoſed, which is more perhaps than can be ſaid of many others. I was ſoon informed that ſo far from being offended at the ſearch my inſtruments had undergone, I might think myſelf well off if I were not ſearched at leaſt as ſtrictly, every time I went in or out at the city gates [41]. This cuſtom appears the more ridiculous

[41] This ſearch is made in the moſt ridiculous and indecent manner imaginable; no part of the clothing is exempt: their aim is to prevent the exportation of piaſtres, and conſequently no one is ſuffered to go in or out of the town with more than five piaſtres about him, nor even with any conſiderable ſum of French money. Tobacco is likewiſe prohibited; not long ago, this abſurdity was carried ſo far, as even to throw away what

ridiculous to ſtrangers, as it exiſts no where but at Cadiz.

The city of Cadiz is too well known to need a minute deſcription; beſides, there are but few monuments to excite admiration. The only remarkable edifice, or rather that will be ſo in time, if ever it is finiſhed, is a church all built with marble. In fifty years, they have raiſed it to the height of thirty feet. The fortifications on the ſide of the land gate are very fine. The only walk about Cadiz is by the ſea ſide, towards the road; it is called the *Lameda*; it is expoſed to the ſcorching ſun in the day time, and at night to the cold air of the ſea, and to the leaſt wind

what ſnuff you had in your ſnuff-box, and only leave enough for the day. The friars alone are exempted from the ſearch; no doubt they are ſuppoſed to be incapable of making an ill uſe of the reſpect ſhewn to, and the confidence repoſed in them.

that

that blows. This disagreeable situation prevents any trees from growing there above fifteen feet high. The prospect of the road, and the ships continually going in and out, is in my mind the only pleasure of the Lameda; however, as it is the only walk about town, the most brilliant company meets there every evening. Long cloaks and flapped hats must not appear there till the hour of the *Angelus*, but from that moment you do as you please. The foot walk is railed in on both sides with stone, and on the outside the coaches drive gently round, drawn by the prettiest mules in the world.

I might have saved myself the trouble of removing my instruments to Cadiz; I found a great many, and of the best construction, in the marine observatory. This observatory was erected under the direction of Mr. Godin. It is advantageously situated

ſituated by the ſea-ſide, on the top of a very high tower. The inſtruments are all placed in a very ſpacious ſquare ſaloon, with windows on all ſides, that command the whole compaſs of the horizon; this ſaloon opens into a gallery towards the ſea, whence you have a full view of the whole ſky, and ſtill better than from the platform of the ſaloon. The death of the laſt director had occaſioned ſome neglect in the obſervatory, ſo that when I came there, the apparatus was not quite in order; but Mr. Tofino, a lieutenant in the ſervice, who had been juſt appointed to ſucceed him, was preparing to reſtore and put it to rights, and to enter upon a courſe of obſervations, which will be the more uſeful, as very few good ones have been hitherto made in this city. I had been directed to enquire what obſervations had been made relative to the determination of the longitude of Cadiz, concerning which

which there are great doubts; I made all the enquiries I poſſibly could, but was not able to find in the obſervatory, either obſervations, or the leaſt ſign of there having been any made, or any journal kept of ſuch obſervations. The eclipſe of 1764 was the only thing that appeared to have been accurately obſerved. I had it in charge to collect theſe obſervations, and Mr. Tofino obliged me with them. I found at Cadiz, Meſſieurs Doz and Medina, two lieutenants and aſtronomers, appointed by the Court of Spain to go to California, there to obſerve the tranſit of Venus, jointly with Mr. Chappe *. They were in hourly expectation of ſailing, but the fleet being retarded, I had the ſatisfaction, during the whole time I ſtaid at Cadiz, of having thoſe gentlemen cloſely attend my obſervations; they were even ſo kind as to make ſome with me relative to my object.

A ſtay

* See page 8.

A ſtay of twenty days at Cadiz, enabled me to go through all the operations relative to my purpoſe, and I thought I might flatter myſelf with having thoroughly verified the time keepers in this place; it may well be ſuppoſed I was eager to draw up the reſults. The different aſpects in which they may be viewed, would require long and minute diſcuſſions: I ſhall therefore confine myſelf to give the ſubſtance of them, ſufficient to convey an idea of the ſucceſs of the trial.

The reſult of the firſt obſervations I made at Cadiz was this:

That a ſhip which ſhould have been at ſea an hundred and nine days, would have been miſled by one of theſe watches, only 56 minutes of a degree at her landing at Cadiz, which makes an error of about

fourteen leagues in longitude [49]. By the other watch, which is that which had been opened at the iſland of Saint Pierre, the error would have been of 1 degree 45 minutes, that is, about twenty-ſeven leagues.

Now, the moſt experienced and ſkilful navigators make no ſcruple to own that in a run of two months, and ſometimes leſs, they are apt to miſtake by fifty or ſixty leagues. How advantageous would it be then to the navy, to have a watch that, at the end of four months, would bring the longitude right, within fourteen leagues.

[49] In this determination, I ſuppoſe the longitude of Cadiz to be 8 deg. 21 min. but there is reaſon to think this city lies 12 minutes farther weſt than it has been placed hitherto, which leſſens the error of the time keepers by juſt ſo many. They both agreed in placing Cadiz more weſtward than it ſtands in the maps.

Doubtleſs

Doubtleſs the ſucceſs of this time keeper would have been perfectly ſatisfactory, had it not undergone a greater alteration than I could have wiſhed, during my ſtay at Cadiz. The ſeries of obſervations I made at that place, affords an inſtance of the compenſations of irregularity that may happen in the movement of a watch, and ſhew the neceſſity of intermediate verifications, to judge of its march with any certainty in long voyages.

Having taken a ſufficient number of obſervations, I ſent my watches and inſtruments on board, and only waited for a fair wind to ſet ſail, but was detained twelve days longer. This delay, the ſcantineſs of our proviſions, and the advanced ſeaſon of the year, determined us to give up going to Liſbon, and it was reſolved that we ſhould go directly to Breſt.

We ſailed out of the road of Cadiz on the 14th of October; an eaſterly wind drove us out to ſea, and the next day we paſſed Cape St. Vincent. We then begun to ſteer our courſe northward; but the winds preſently failed us, and we had almoſt a conſtant calm for a whole week, which was the more diſagreeable, as we had a high and rolling ſea. We imputed this ſwell, which even a calm could not abate, to ſome guſt of wind that had lately blown in this latitude; this was the more probable, as we had obſerved the water very rough in the road, one day while we were yet at Cadiz, and it ſeemed to be very foul weather at ſea. This reconciled us to the diſappointment of having been wind bound.

It was about the latitude of Liſbon that we were becalmed; happily for us, what little wind there was, brought us on in our way, but this was ſo trifling, that it would have

have taken up a long time to have doubled Cape Finiſterre. At laſt a favorable wind ſprung up, and in a few days we got clear of the Spaniſh coaſt, and in the latitude of Breſt.

We were going to reconnoitre the place on the 28th of October, and were preparing to go in, when a ſudden gale from the ſouth obliged us to give up our intention of landing, and to think of nothing but keeping in the latitude. The wind ſhifting more to the weſt, without abating in the leaſt, the ſea grew very tempeſtuous, and the horizon very thick. We were toſſed for three days with a violent ſtorm, waiting for the clearing up of the weather, and for a more tractable wind, to go and examine the land, which our eſtimate brought us nearer to than we wiſhed. Our ſhip ſuſtained ſeveral ſmart ſhocks, yet we were able to keep up our ſails almoſt the whole time.

The

The 30th of October in the morning the wind abated a little, and turned to north weſt; the horizon cleared up; all, in ſhort, put on a promiſing aſpect for our running towards the ſhore. At noon we diſcovered the iſle of Uſhant; leaving this iſland to the northward, we entered the paſſage of Iroiſe, which brought us fairly into the road of Breſt, where we came to an anchor at ſeven in the evening.

Thus ended a voyage of four months and a half, lucky in every particular, I dare not add, ſucceſsful in the execution; that muſt be left to the judgment of the public. Being landed at Breſt, I made uſe of the firſt moments of fair weather, as they could not be expected to be frequent at this advanced ſeaſon. I ſoon got a ſufficient number of obſervations to cloſe the trial of the time keepers. I then delivered them up into the hands of Mr.

Le Roy, and returned to Paris, where I arrived on the 28th of November. I had collected on board the ſhip all the obſervations I had made for trying the watches, ſo that I was very ſoon able to give an account to the Academy both of my operations and of their reſults.

FINIS.

MVSEVM
BRITAN
NICVM

6